Installation Guide

HP 9000 rp3410 and HP 9000 rp3440

hp invent

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Preface

This preface contains the following sections:

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Intended Audience

This document is intended to provide technical product and support information for authorized service providers, customer system administrators, and HP support personnel.

What's New?

The layout of this document was changed to improve usability.

Notational Conventions

The following notational conventions are used in this publication.

WARNING	**A warning lists requirements that you must meet to avoid personal injury.**

CAUTION	A caution provides information required to avoid losing data or avoid losing system functionality.

NOTE	A note highlights useful information such as restrictions, recommendations, or important details about HP product features.

- `Commands and options` are represented using `this font`.

- **`Text that you type exactly as shown`** is represented using **`this font`**.

- *`Text to be replaced with text that you supply`* is represented using *`this font`*.

  Example:
  "Enter the `ls -l` *`filename`* command" means you must replace *`filename`* with your own text.

- **Keyboard keys and graphical interface items (such as buttons, tabs, and menu items)** are represented using **this font**.

  Examples:
  The **Control** key, the **OK** button, the **General** tab, the **Options** menu.

- **Menu —> Submenu** represents a menu selection you can perform.

Example:
"Select the **Partition —> Create Partition** action" means you must select the **Create Partition** menu item from the **Partition** menu.

- `Example screen output` is represented using `this font`.

Reader Comments and Feedback

HP welcomes your feedback on this publication. Please address your comments to **edit@presskit.rsn.hp.com** and note that you will not receive an immediate reply. All comments are appreciated.

Related Information

You can find other information on HP server hardware management, Microsoft® Windows®, and diagnostic support tools in the following publications.

Web Site for HP Technical Documentation: http://docs.hp.com

The main Web site for HP technical documentation is **http://docs.hp.com**, which has complete information available for free.

Server Hardware Information: http://docs.hp.com/hpux/hw/

The **http://docs.hp.com/hpux/hw/** Web site is the systems hardware portion of the docs.hp.com and provides HP nPartition server hardware management details, including site preparation, installation, and more.

Windows Operating System Information

You can find information about administration of the Microsoft® Windows® operating system at the following Web sites, among others:

- **http://docs.hp.com/windows_nt/**

- **http://www.microsoft.com/technet/**

Diagnostics and Event Monitoring: Hardware Support Tools

Complete information about HP's hardware support tools, including online and offline diagnostics and event monitoring tools, is at the **http://docs.hp.com/hpux/diag/** Web site. This site has manuals, tutorials, FAQs, and other reference material.

Web Site for HP Technical Support: http://us-support2.external.hp.com

HP's IT resource center Web site at **http://us-support2.external.hp.com/** provides comprehensive support information for IT professionals on a wide variety of topics, including software, hardware, and networking.

Books about HP-UX Published by Prentice Hall

The **http://www.hp.com/hpbooks/** Web site lists the HP books that Prentice Hall currently publishes, such as HP-UX books including:

- *HP-UX 11i System Administration Handbook*
  http://www.hp.com/hpbooks/prentice/ptr_0130600814.html

- *HP-UX Virtual Partitions*
  http://www.hp.com/hpbooks/prentice/ptr_0130352128.html

HP Books are available worldwide through bookstores, online booksellers, and office and computer stores.

Printing History

The Printing History below identifies the edition dates of this manual. Updates are made to this publication on an unscheduled, *as needed*, basis. The updates will consist of a complete replacement manual and pertinent on-line or CD-ROM documentation.

Fifth Edition   . . . .   July 2004

Sixth Edition   . . . .   April 2005

1 Server Overview and Unpacking

Server Overview

The HP 9000 rp3410 server is a 1-way or 2-way, rack- or tower-mount server. Similarly, the HP 9000 rp3440 server is a 1-way, 2-way or 4-way, rack- or tower-mount server. Both of these servers are based on the PA-RISC processor family architecture. The HP server accommodates up to 12 DIMMs and internal peripherals including disks and DVD-ROM. Its high availability features include hot-swap power supplies and hot-plug disk drives. The supported operating system is HP-UX 11i v1 (and newer HP-UX versions that support PA-RISC systems).

Figure 1-1   HP 9000 rp3410 and HP 9000 rp3440 Server (front view)
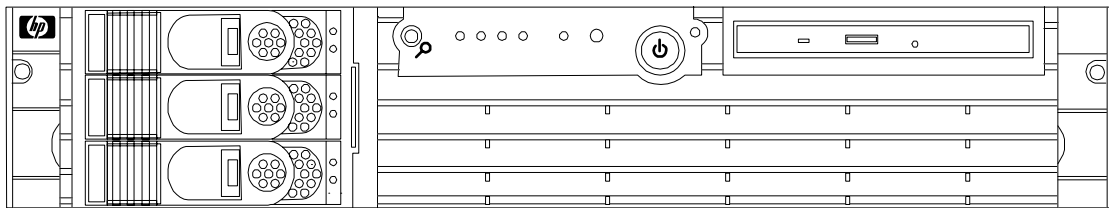
Figure 1-2   HP 9000 rp3410 and HP 9000 rp3440 Server (front view with bezel removed)
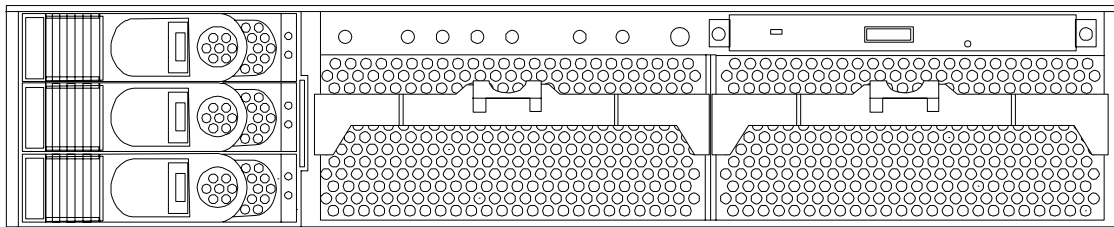
Figure 1-3   **HP 9000 rp3410 and HP 9000 rp3440 Server (rear view)**
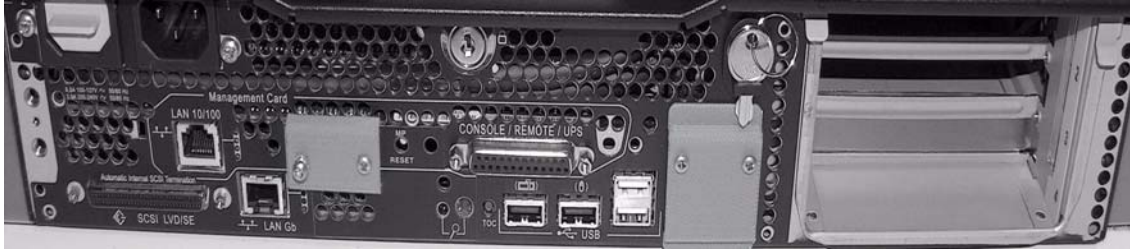
Figure 1-4   **HP 9000 rp3410 and HP 9000 rp3440 Server (tower version)**
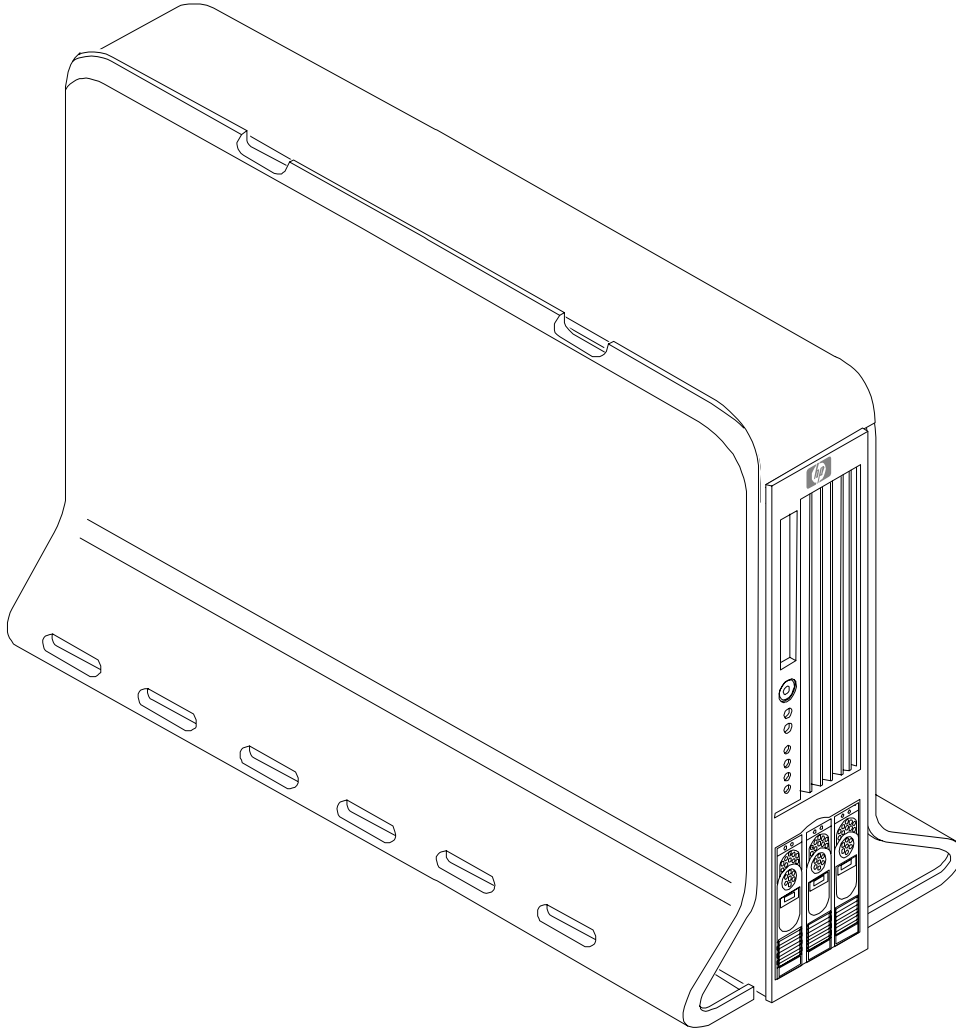
Unpacking the Server

HP shipping containers protect their contents under normal shipping conditions. After the equipment arrives, carefully inspect each carton for signs of shipping damage. A tilt indicator is installed on each carton shipped. The beads in the indicator will roll to the upper position if the container has been tilted to an angle that could cause equipment damage. The tilt indicator itself will have two windows and each window under normal conditions will show four beads present. If a carton has been mishandled, accidentally dropped, or knocked against something, the tilt indicator will indicate missing beads. If damage is found, document the damage with photographs and contact the transport carrier immediately.

If the equipment has any damage, you must obtain a damage claim form from the shipping representative. You must complete the form and return it to the shipping representative.

Unpacking a Non-Racked Server

NOTE	HP recommends the use of a lifter, such as a RonI Company model 17000 SP 400 lifting device, when moving a non-racked system.

Unloading with a Lifter

To unload the server from the pallet using a lifter, perform the following steps:

WARNING	**Use caution when using a lifter. Because of the weight of the HP 9000 rp3410 or HP 9000 rp3440 server, the server must be centered on the lifter forks before raising it off the pallet to avoid injury.**

Step 1. Follow the instructions on the outside of the server packaging to remove the banding and carton top from the server pallet.

Step 2. Remove all cartons from the pallet, leaving only the server.

Step 3. Lower the cardboard from the side on which the lifter will be inserted and slide the server as close as possible to the edge of the pallet.

Step 4. Break off any foam packaging which could prevent the lifter from being fully inserted under the server. Do not remove the foam packaging from the corners of the system. This foam is required to elevate the system and allow the forks of the lifter to be placed under the server.

Step 5. Insert the lifter forks under the server.

Step 6. Carefully roll the lift forward until it is fully positioned against the side of the server.

Step 7. Slowly raise the server off the pallet until it clears the pallet cushions.

Step 8. Carefully roll the lifter and server away from the pallet. Do not raise the server any higher than necessary when moving it over to the rack.

Installing the HP Server into a Rack

HP Rack

All HP 9000 rp3410 and HP 9000 rp3440 servers that are to be installed into racks are shipped with equipment mounting slides. With every set of slides comes an installation guide: *Installation Guide, Mid-Weight Slide Kit, 5065-7291*. Follow the steps in this installation guide to determine where and how to place the server into the rack.

Non-HP Rack

There is a guide for evaluating the installation of HP equipment in non-HP racks. This document should be utilized when there is a need to evaluate and qualify whether any HP equipment can be installed, maintained, and serviced in a non-HP rack.

The guide is located on the Web at http://www.hp.com/racksolutions.

Once there, select "mounting information" from the menu on the left side, then select the guide titled *Mounting in Non-HP Racks*.

Converting Server to Rack from Tower and to Tower from Rack

If you wish to change your rack-mount HP server to a tower system or your tower system to a rack-mount, read and follow the instructions in: *Rack to Tower and Tower to Rack Conversion Guide, A7136-96002*.

2 Installing and Configuring

This chapter provides information on the controls and indicators of the HP server and instructions required for installing additional components and configuring the HP 9000 rp3410 or HP 9000 rp3440 server.

The following additional components may be added to the HP server:

*   Internal hard disk drives
*   DVD-ROM drive
*   Memory DIMMs
*   PCI cards
*   Power supply
*   Dual processor module

Safety Information

This chapter describes installing additional or optional hardware to your HP 9000 rp3410 and HP 9000 rp3440 servers. Use care to prevent injury and equipment damage when performing these procedures. Voltages may be present within the server. Many assemblies are sensitive to damage by electrostatic discharge.

To ensure safe handling of components and to prevent injury to personnel, or damage to the HP server, adhere to the following procedures:

*   If removing or installing a hot-swap or hot-plug item, follow the instructions provided in this guide
*   If installing a hot-swap item when power is applied (fans are running), reinstall the server cover immediately to prevent overheating
*   If installing an assembly that is not hot-swappable, disconnect the power cable(s) from the server external power connector(s)

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a removable media drive.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

*   Do not wear loose clothing that may snag or catch on the server or on other items
*   Do not wear clothing subject to static charge build-up, such as wool or synthetic materials
*   If installing an internal assembly, wear an antistatic wrist strap and use a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (P/N 9300-1155)

•   Handle accessory boards and components by the edges only. Do not touch any metal-edge connectors or any electrical components on accessory boards.

Service Tools Required

Service of this product may require one or more of the following tools:

•   Electrically Conductive Field Service Kit (P/N 9300-1155)

•   1/4 inch flat blade screwdriver

•   ACX-15 Torx® screwdriver

•   Special processor tool kit, (P/N 5069-5441)

Control Panel

The control panel of the HP 9000 rp3410 or HP 9000 rp3440 server provides the controls and indicators commonly used for operation.

Figure 2-1   Front View
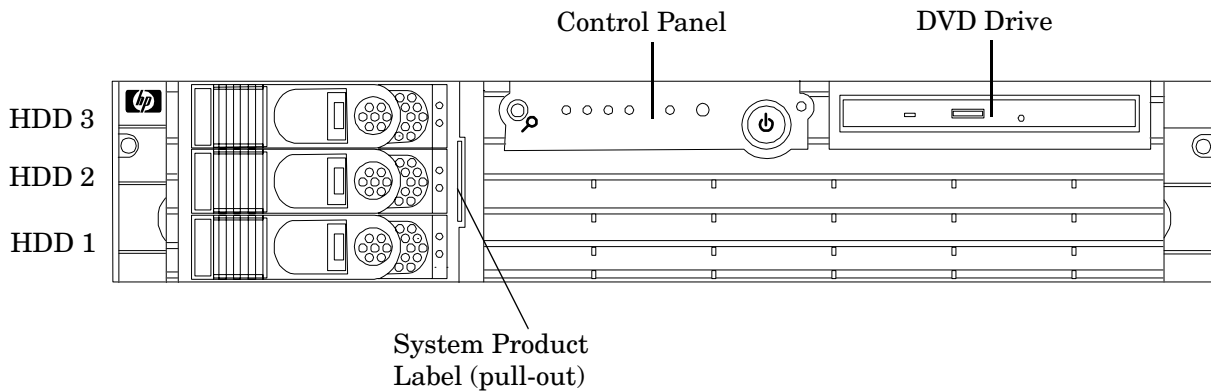
Figure 2-2   Control Panel
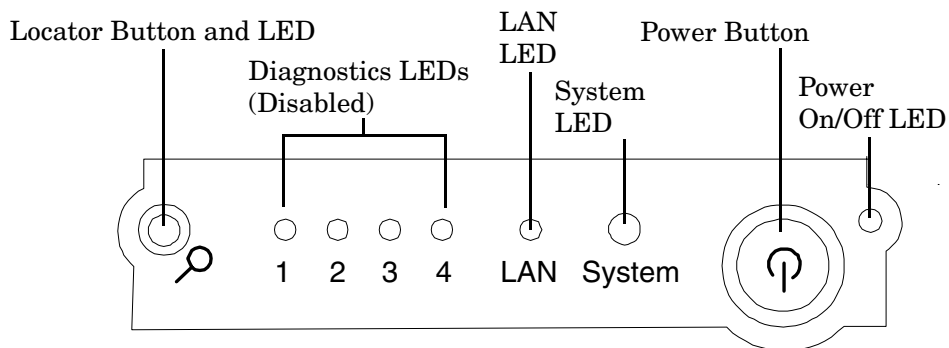
Table 2-1   Control Panel LEDs and Switches

Name	Function
Power on/off LED	The green power on/off LED is illuminated when the power is on
Power button	Controls the power supply (turns system power on or off) if power is available to the power supply. (Controls both power supplies if two are installed)
	If power is off but power is available to the power supplies, pressing the Power button:
	Momentarily (less than 1 second) turns on the power supplies and applies power to server circuits
	For more than 1 second and then released, has no effect
	If power is on and the system is at initial system loader (ISL), pressing the Power button:
	Momentarily (less than 1 second) has no effect
	For more than 1 second, but less than 5 seconds—do not use. This selection initiates e-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	For more than 5 seconds (and then released) causes an immediate and hard power down
	If power is on and the system is at the boot console handler (BCH), pressing the Power button:
	Momentarily (less than 1 second) causes an immediate and hard power down
	For more than 1 second, but less than 5 seconds—do not use. This selection initiates e-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	For more than 5 seconds (and then released) causes an immediate and hard power down
	If power is on but the OS has been shut down, pressing the Power button:
	Momentarily (less than 1 second) has no effect
	For more than 1 second, but less than 5 seconds—do not use. This selection initiates e-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	For more than 5 seconds (and then released) causes an immediate and hard power down
	If the OS is running, pressing the Power button:
	Momentarily (less than 1 second) has no effect
	For more than 1 second, but less than 5 seconds—do not use. This selection initiates e-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	For more than 5 seconds (and then released) causes an immediate and hard power down
System LED	The System LED provides information about the system status. When operation is normal, the LED is green. When there is a system warning, the LED is flashing yellow. When there is a system fault, the LED is flashing red[a]

Table 2-1   **Control Panel LEDs and Switches (Continued)**

Name	Function
LAN LED	The LAN LED provides status information about the LAN interface. When the LAN LED is flashing, there is activity on the LAN
Locator button and LED	The locator button and LED are used to help locate this server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the rear panel of the server illuminates. This function may be remotely activated.

a. See the Troubleshooting chapter of this guide and refer to the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for details and information provided by the system LEDs.

Additional Controls and Indicators

The HP 9000 rp3410 or HP 9000 rp3440 server can have up to three low-voltage differential (LVD), 3.5 inch form factor hard disk drives (HDDs) installed. These hard disk drives have LEDs that provide status and activity information.

Hard Disk Drive Indicators

The hard disk drives have two LEDs per drive, as described below.

- Status LED—The drive status LED is not used on the HP 9000 rp3410 or HP 9000 rp3440 server.
- Activity LED—The Drive Activity LED is flashing green and indicates disk drive activity. This LED is directly controlled by the disk drive and turns on when a drive is accessed.

Figure 2-3   Hard Disk Drive LED Indicators
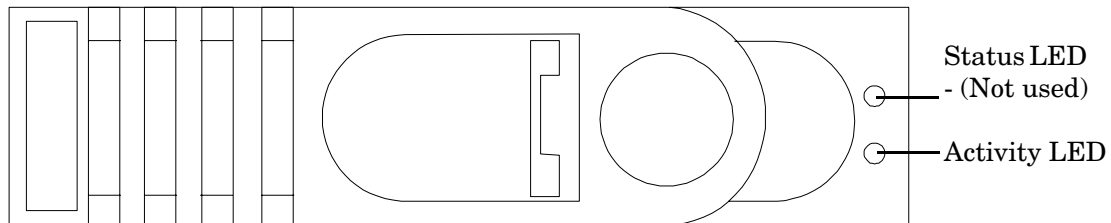
Table 2-2   Hard Disk Drive LED Definitions

LED	Activity	Description
Status LED	None	Not used
Activity LED	Flashing green	Ready/scanning hard drive

Optional Removable Media Drive

The HP 9000 rp3410 or HP 9000 rp3440 server is delivered without a removable media drive. Either a DVD-ROM or CD-RW/DVD-ROM drive may be added. Each of these optional devices has one activity LED.

Figure 2-4   DVD–ROM or CD-RW/DVD-ROM LED Indicators
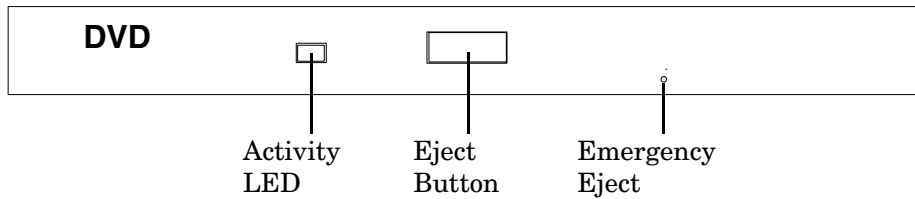
Table 2-3   DVD Drive LED Definitions

LED	Activity	Description
Activity LED	Flashing green	Drive is active

Rear Panel

The HP 9000 rp3410 or HP 9000 rp3440 server rear panel includes communication ports, I/O ports, AC power connector, locator LED, and button. Additional LEDs located on the rear panel of the HP 9000 rp3410 or HP 9000 rp3440 server signal the operational status of:

*   10/100/1000 base-T ethernet LAN port

*   iLO manageability card LAN port

Figure 2-5   Rear View
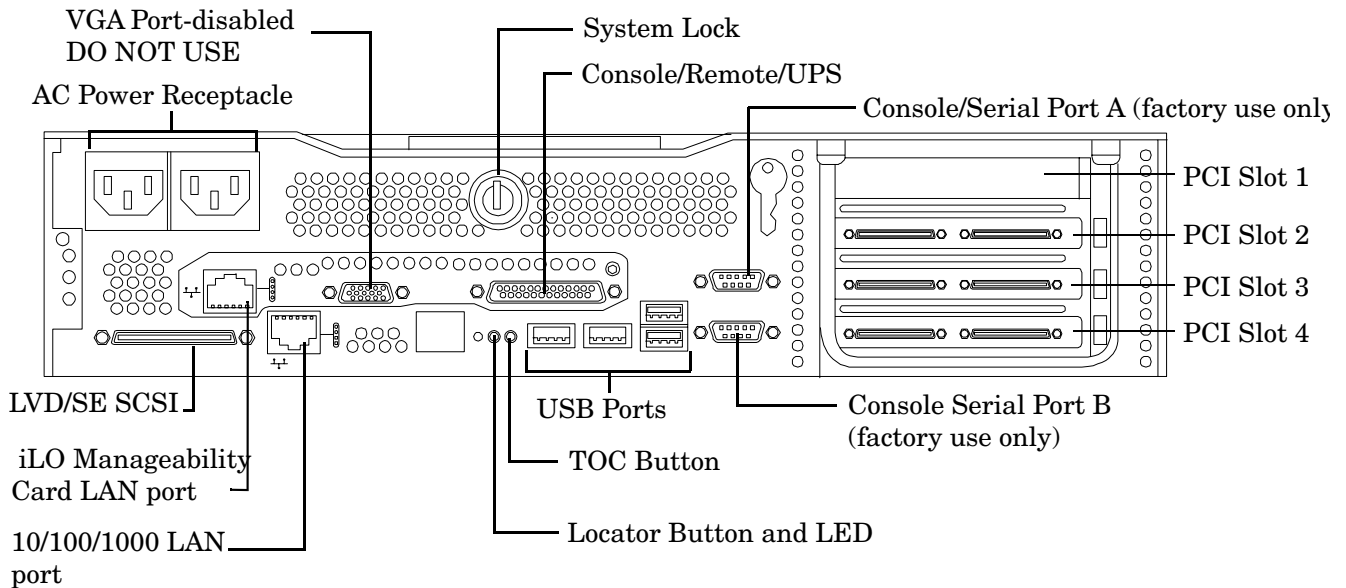
Table 2-4   Rear Panel Connectors and Switches

Connector/Switch	Function
AC power	Primary power connection for the server
LVD/SE SCSI	68-pin, low-voltage differential, single-ended U160 SCSI. This connector provides external SCSI connection on SCSI Channel B
(1 GB) 10/100/1000 LAN	10/100/1000 base-T ethernet LAN connector
Serial A (console) & Serial B (do not use)	9-pin male serial ports—factory use only
USB	Four universal serial bus (USB 2.0) connectors
TOC	Transfer of control button. Halts all system processing and I/O activity and restarts the computer system

Table 2-4   Rear Panel Connectors and Switches (Continued)

Connector/Switch	Function
Locator button and LED	The locator button and LED are used to help locate a server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the front panel of the server illuminates. This function may be remotely activated
Video (not used)	15-pin female video connector. DISABLED—DO NOT USE. To enable video capability you must obtain the supported A6150 video PCI card. Refer to the associated ReadMe, A6150-90001
Console/remote/UPS	25-pin female serial data bus connector for the iLO manageability card
10/100 iLO manageability card LAN	10 MB/100 MB LAN connector for the iLO manageability card

10/100/1000 Base-T Ethernet LAN Connector

The rear panel 10/100/1000 base-T ethernet LAN connector has the following status and activity LEDs.

Figure 2-6   10/100/1000 Base-T Ethernet LAN Connector LEDs
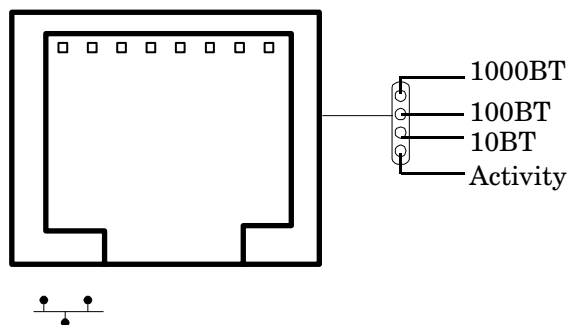
Table 2-5   10/100/1000 Base-T Ethernet LAN Connector LEDs

LED	Description
1000BT	Blinking green, the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled; off—no link
100BT	Blinking green, the 100 MHz with ethernet protocol and twisted-pair wiring is enabled; off—no link
10BT	Blinking green, the 10 MHz with ethernet protocol and twisted-pair wiring is enabled; off—no link
Activity	Blinking green, LAN activity

iLO Manageability Card LAN LEDs

The iLO manageability card LAN uses an RJ-45 type connector. This connector has four LEDs that signal status and activity.

Figure 2-7   iLO Manageability Card LAN LEDs
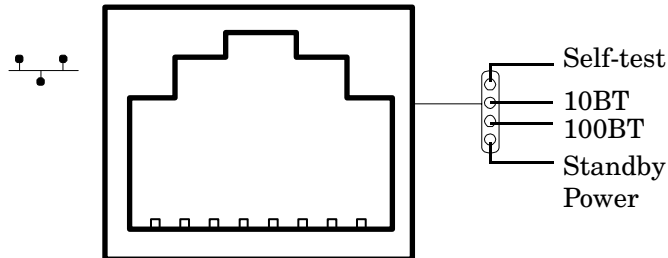
Table 2-6   iLO Manageability Card LAN LEDs

LAN LED	Location	Color	State
Self-test	Top	Yellow	MP running self-test or error
		Off	MP has booted
10BT	2nd from top	Green	10BT link established
		Blinking green	10BT activity
		Off	No link or 100BT link
100BT	2nd from bottom	Green	100BT link established
		Blinking green	100BT activity
		Off	No link or 10BT link
Standby Power	Bottom	Green	Standby power on
		Off	Standby power off

Removing and Replacing System Covers and Bezels

To upgrade, remove, or replace most system components, you must first remove the covers from the system chassis. This section explains how to remove and replace the covers for both rack and tower-mounted configurations.

WARNING	**Do not remove the system cover without first turning the system off and unplugging the power cord from the outlet or power protection device unless you are only replacing a hot-swappable fan. Always replace the cover before turning the system on.**

Rack-Mount System

To access the internal components on a rack-mounted system, pull the system out onto the rail guides and remove the metal cover.

Accessing a Rack Mounted Server

The HP 9000 rp3410 and HP 9000 rp3440 servers are designed to be rack mounted. The following procedure explains how to gain access to a server that is mounted in an approved rack. For slide installation instructions, refer to the *Installation Guide, Mid-Weight Slide Kit, 5065-7291*. This document can be accessed at: http://www.hp.com/racksolutions.

WARNING	**Ensure that all anti-tip features (front and rear anti-tip feet installed; adequate ballast properly placed; and so on) are employed prior to extending the server.**

Extend the Server from the Rack

NOTE	Ensure that there is enough area (approximately 1.5 meters {4.5 ft.}) to fully extend the server out the front to work on it.

To extend the server from the rack, perform the following steps:

NOTE	If you are replacing a hot-swappable item, you can leave the system on and external cables (including the power cord) connected.

Step 1. Turn off the system and disconnect the power and external cables from the back of the system.

Step 2. Release the rack latches by rotating them outward (Figure 2-8).

Figure 2-8 Release the Rack Latches
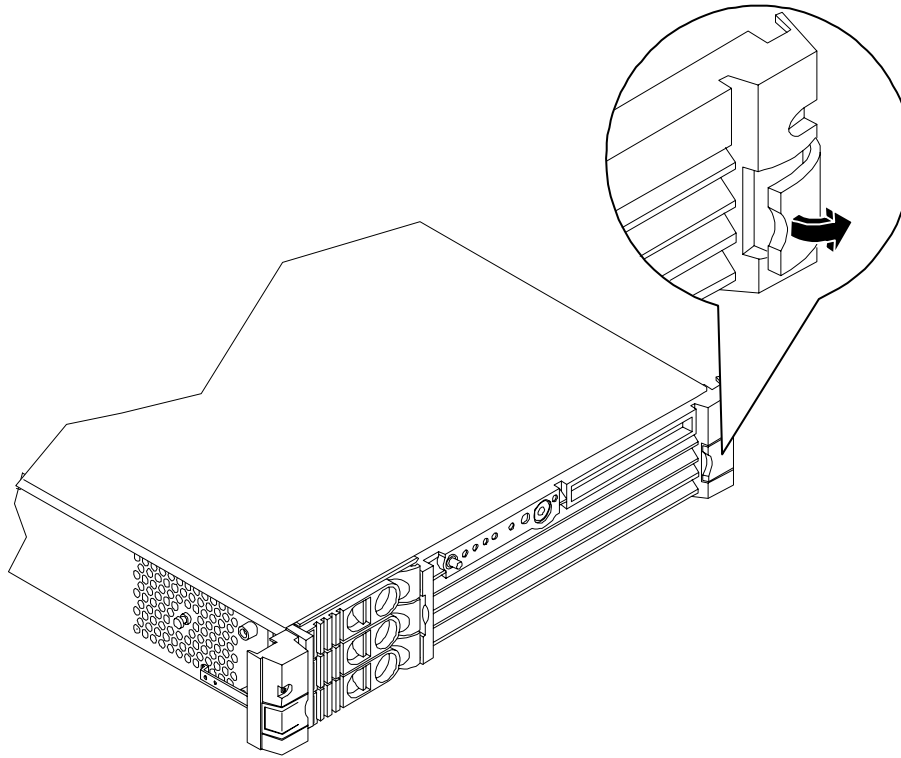
Step 3. Slide the system out of the rack until the guide-rail release clips are visible.

Insert the Server into the Rack

To insert the server into the rack, perform the following steps:

Step 1. Press the rail clips on either side of the server inward and push the server into the rack until it stops.

Step 2. Verify that the rack latches are closed.

Removing and Replacing the Metal Cover

Removal of this cover is necessary when installing or removing many components.

Removing the Metal Cover

NOTE   If you are replacing a hot-swappable item, you can leave the system on and external cables (including the power cord) connected.

Step 1. Turn off the system and disconnect the power and external cables from the back of the system.

Step 2. Ensure the top cover lock keyswitch is in the unlocked position. Rotate the blue release lever toward the back of the system and slide the cover toward the back of the system (Figure 2-9).

Figure 2-9 Removing and Replacing the Metal Cover
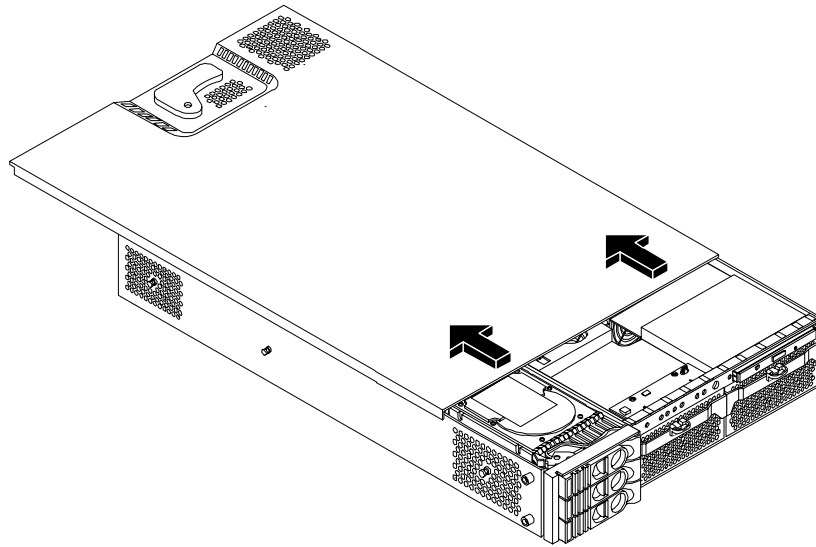
Step 3. Lift the cover off the system chassis.

Replacing the Metal Cover

CAUTION   Secure any wires or cables in your system so they will not get cut or interfere with the replacement of the cover.

Step   1. Align the front edge of the cover with the alignment mark on the optical drive bay (Figure 2-10).

Figure 2-10 Aligning the Metal Cover

To replace cover,
align front edge here
then slide forward
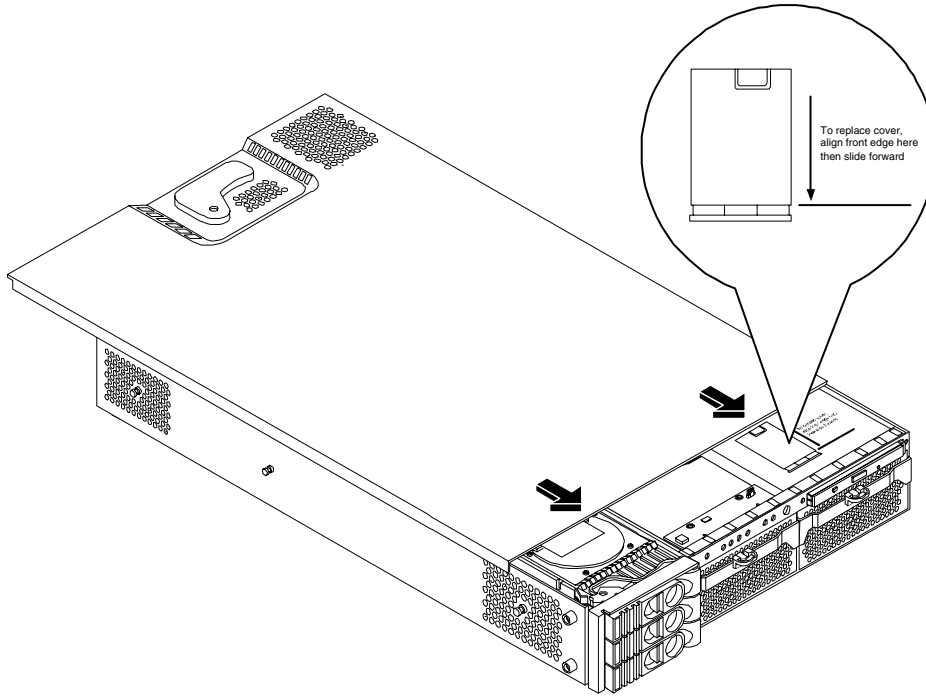
Step   2. Grasp the blue release lever and slide the cover toward the front of the system until the lever snaps into place (Figure 2-11).

Figure 2-11 Closing the Metal Cover
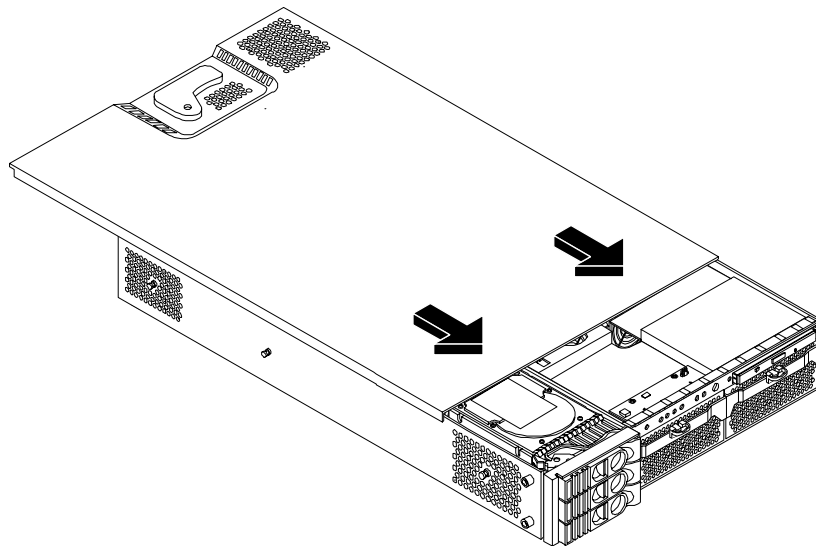
Step   3. Slide the system into the rack enclosure and reconnect the power and external cables.

Removing and Replacing the Front Bezel

You must remove the front bezel from the chassis to gain access to the power supplies and optical drive.

Removing the Front Bezel

Step 1. Press in on the retaining clips located on the right-side of the front panel (Figure 2-12).

Figure 2-12 Front Bezel Retaining Clip
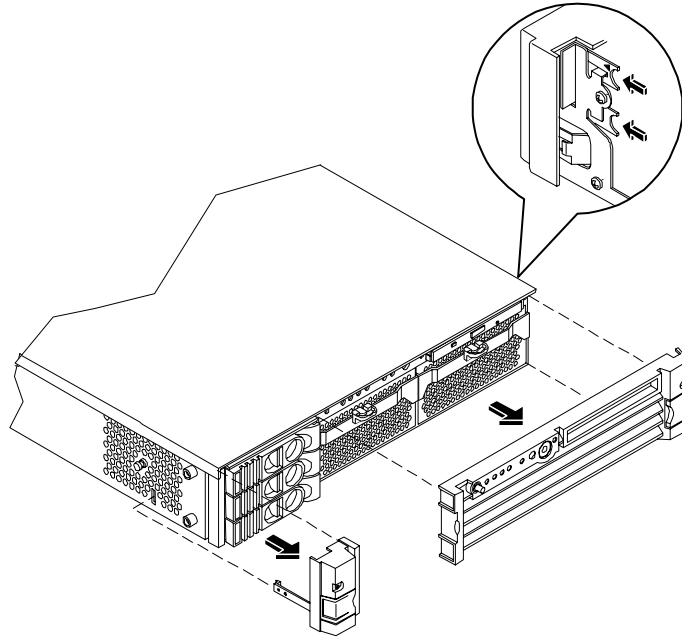
Step 2. Rotate the front panel outward and lift it off the system chassis.

Replacing the Front Bezel

Step 1. Insert the bezel latches into the matching slots on the system chassis.

Step 2. Close the bezel and push toward the front of the system until it locks into place (Figure 2-13).

Figure 2-13 Replacing the Front Bezel
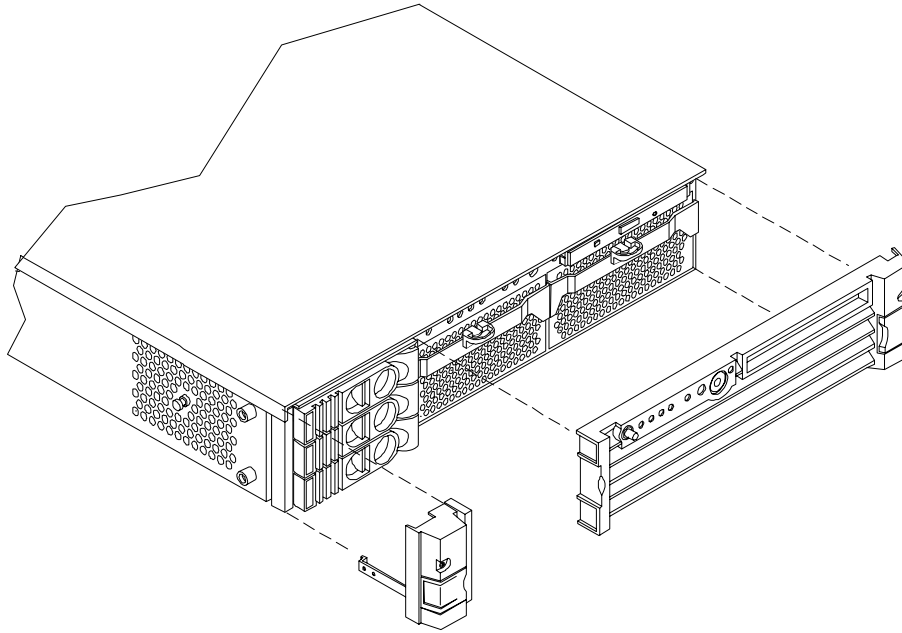
Tower Configuration

NOTE   If you are replacing a hot-swappable item, you can leave the system on and external cables
              (including the power cord) connected.

Removing the Side Covers

Step 1. Turn off the system and disconnect the power and external cables.

Step 2. Remove the plastic cover.

    a. Grasp both indentations at the top of the side panel and pull outward (Figure 2-14).

b. Lift the plastic cover off of the system chassis.

Figure 2-14 Removing the Plastic Cover
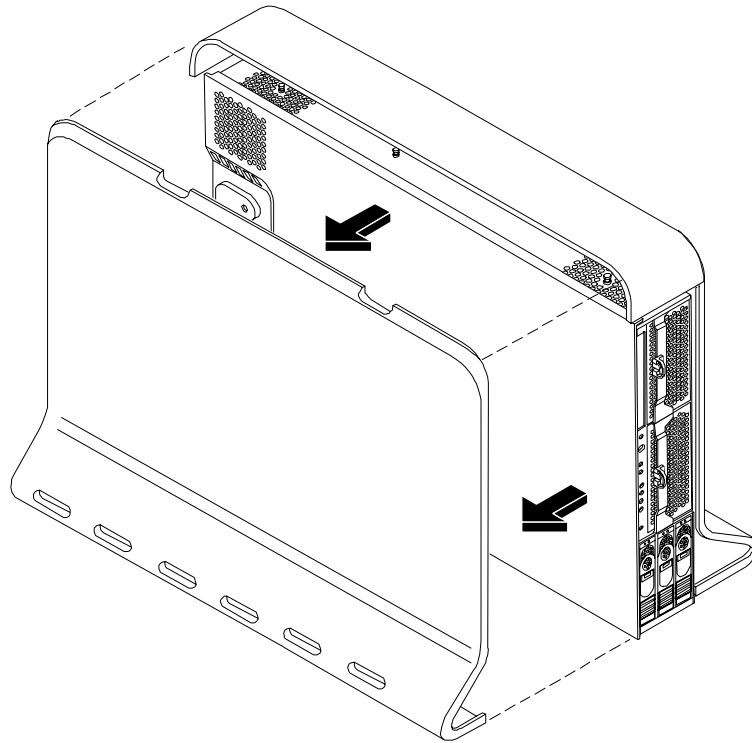
Removing the Metal Cover

Step 1. Remove the metal cover.

Figure 2-15 Removing the Metal Cover
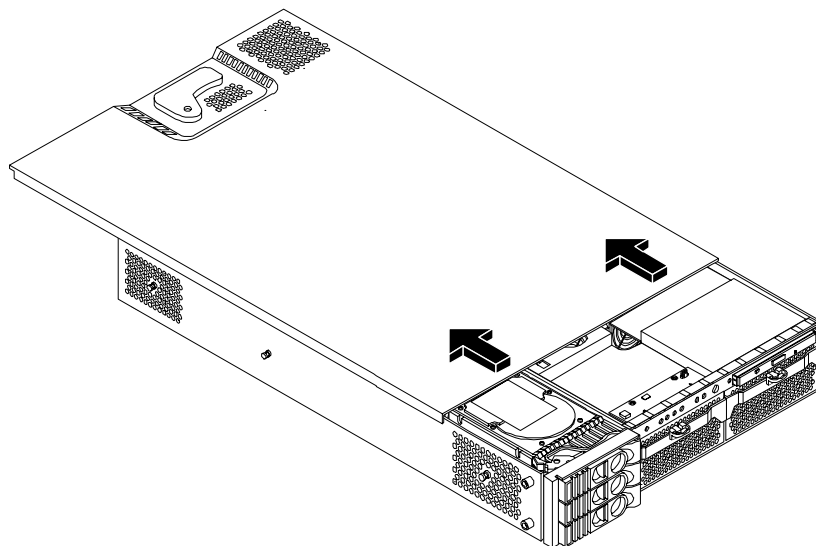
a. Turn the top cover lock keyswitch to the unlocked position.

b. Rotate the blue release handle to release the latch.

c. Slide the cover toward the back of the chassis and lift the cover off (Figure 2-15).

CAUTION	The HP server depends on the access panels being closed for proper cooling of internal components. Operating the system with the cover removed can cause the system to quickly overheat.

Replacing the Metal Covers

Step 1. Replace the metal cover:

| CAUTION	Secure any wires or cables in your system so they do not get cut or interfere with the replacement of the cover.

---

a. Align the front edge of the metal cover with the alignment mark on the optical drive bay (Figure 2-16).

Figure 2-16 Metal Cover Alignment Mark

To replace cover, align front edge here then slide forward
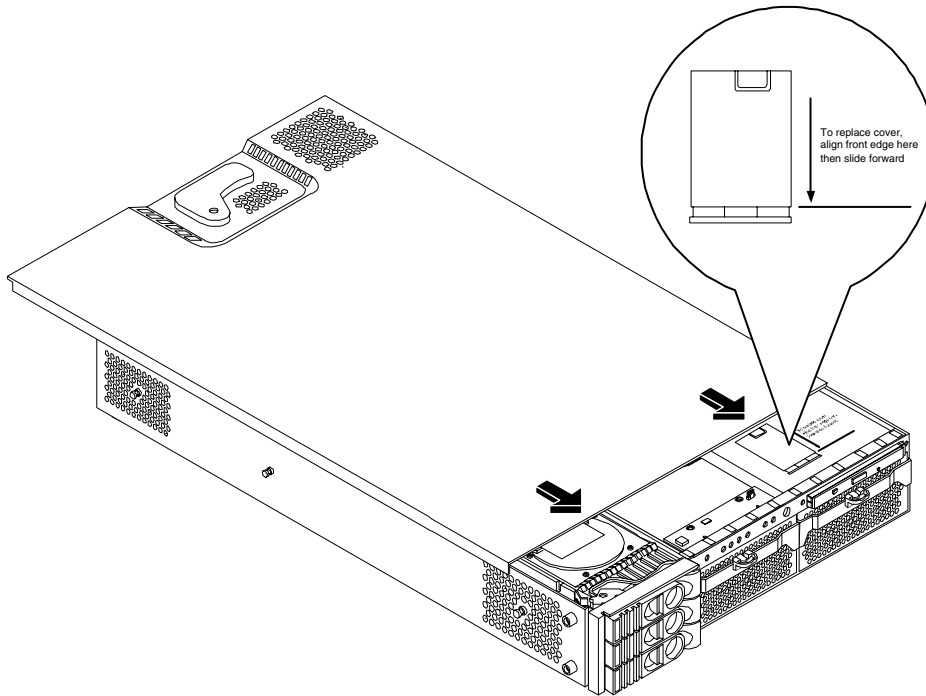
    b. Place the metal cover on the chassis and slide it toward the front of the system until the blue release lever snaps in place (Figure 2-17).

Figure 2-17 Replacing the Metal Cover
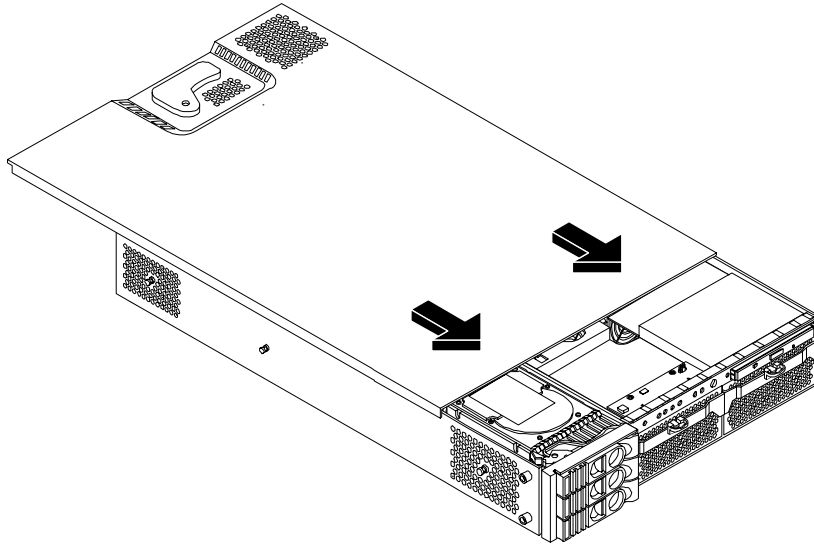
Step 2. Replace the plastic cover:

    a. Align the cover's mounting holes with the matching tabs on the system chassis.

    b. Close the cover until it snaps onto the system chassis.

### Figure 2-18 Replacing the Plastic Cover
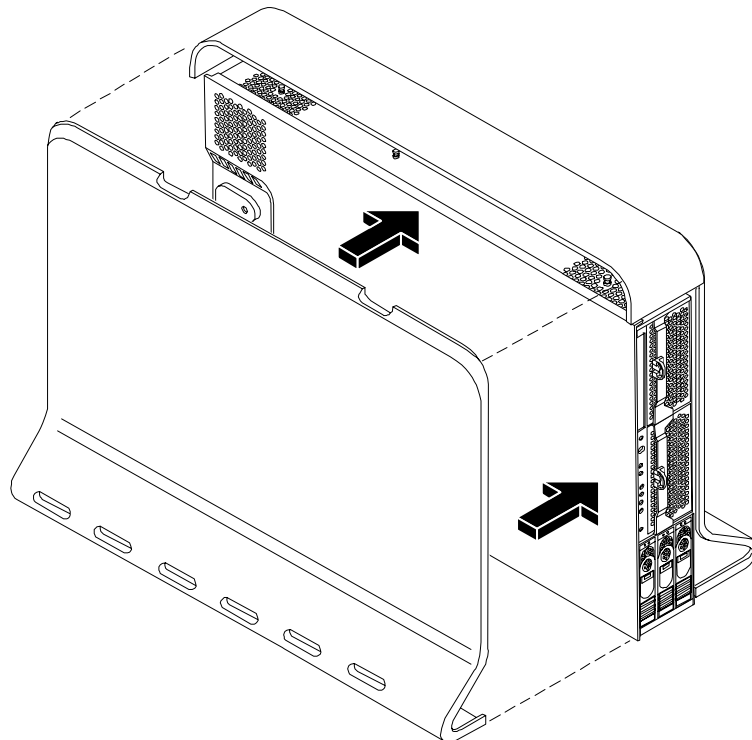
Removing and Replacing Front Bezel

You must remove the front bezel from the chassis to gain access to the power supplies and optical drive.

Removing the Front Bezel

To remove the front bezel parts, perform the following steps:

Figure 2-19   **Front Bezel**
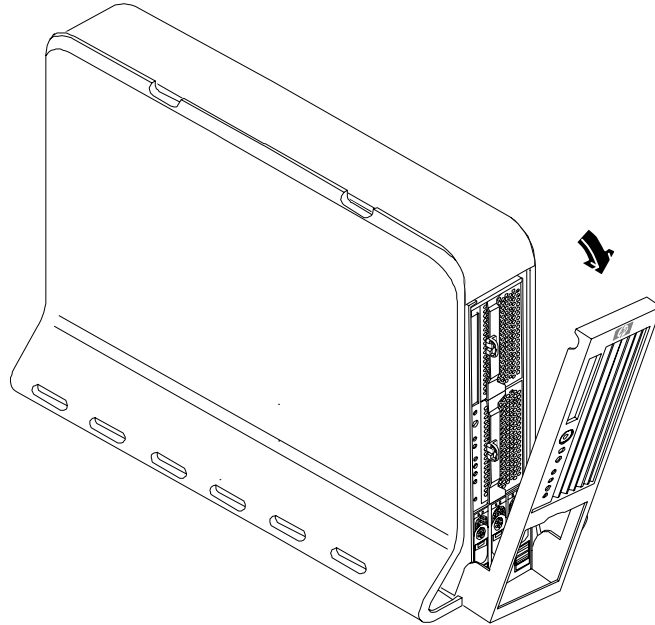
Step   1. Use the indentation at the top edge of the bezel to pull the bezel away from the chassis and to a 45 degree angle (Figure 2-19).

Step   2. Lift the bezel off the mounting tabs and away from the chassis.

Replacing the Front Bezel

To replace the front bezel parts, perform the following steps:

Figure 2-20   Aligning the Tower Front Bezel
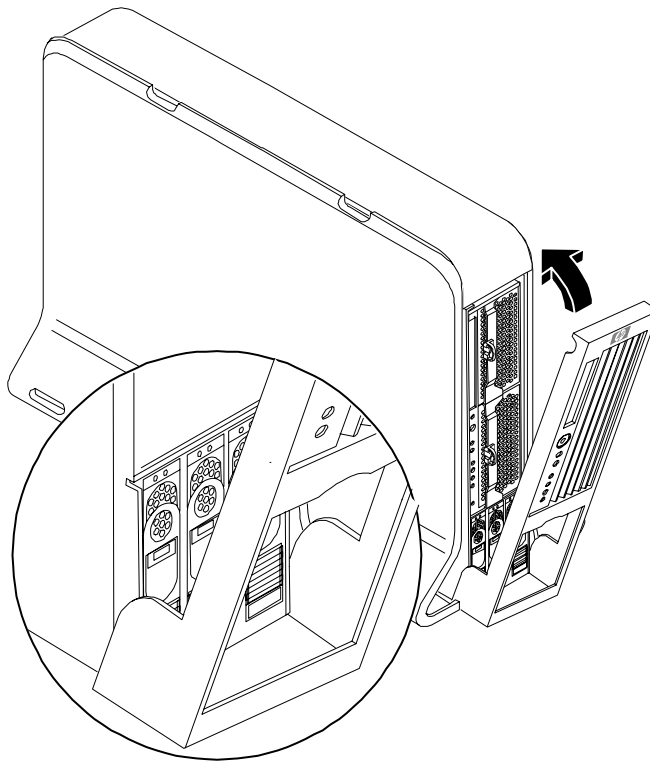
Step 1. Position the bezel at an approximate 45 degree angle and align the retaining slots at the bottom with the retaining tabs on the chassis. Press the bezel against the chassis to engage the tabs (Figure 2-20).

Step 2. Rotate the bezel against the chassis so that it snaps into place.

Installing Internal Hard Disk Drives

This section provides information about installing additional internal hard disk drives.

CAUTION	A hot-plug device may require interaction with the operating system before the device can be safely installed into the server. Verify that the operating system supports installing disk drives while the operating system is running. If the operating system does not support this feature, shut down the operating system before attempting this procedure. Failure to observe this caution will result in system failure.

Figure 2-21   Front View of the HP 9000 rp3410/HP 9000 rp3440 Server
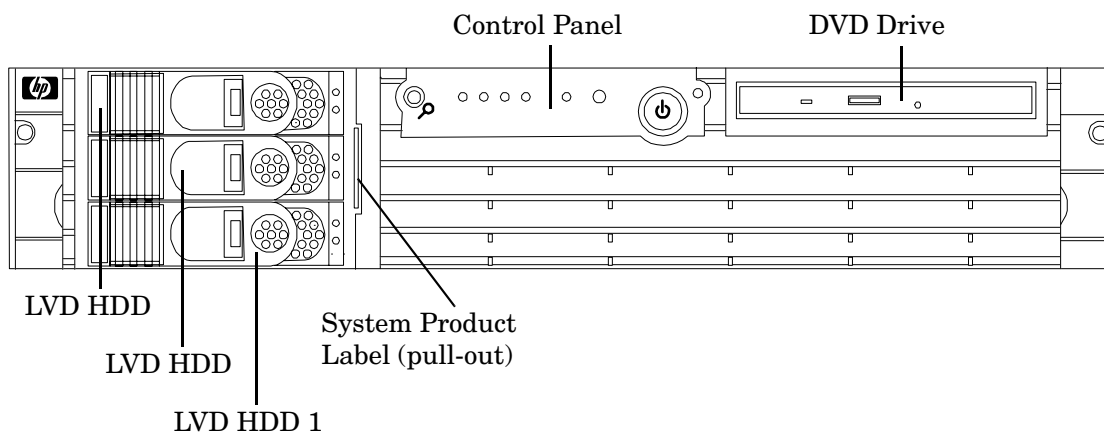
Two additional hard disk drives may be added to your HP server in slots 2 and 3. Always use low profile disk drives (1.0" height) in your HP 9000 rp3410 and HP 9000 rp3440 servers.

To install a hard disk drive, perform the following steps:

Step 1. If you will be locking the hard drive in place, you must remove the cover to access the hard drive lock. Proceed as follows:

   a. If rack-mounted, slide the HP server out from the rack until it stops. (See "Extend the Server from the Rack" on page 25.)

   b. Remove the cover and bezel. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Step 2. Remove the slot filler that is installed in the slot where the additional drive is to be installed.

Figure 2-22 Filler Removal from Slot 1
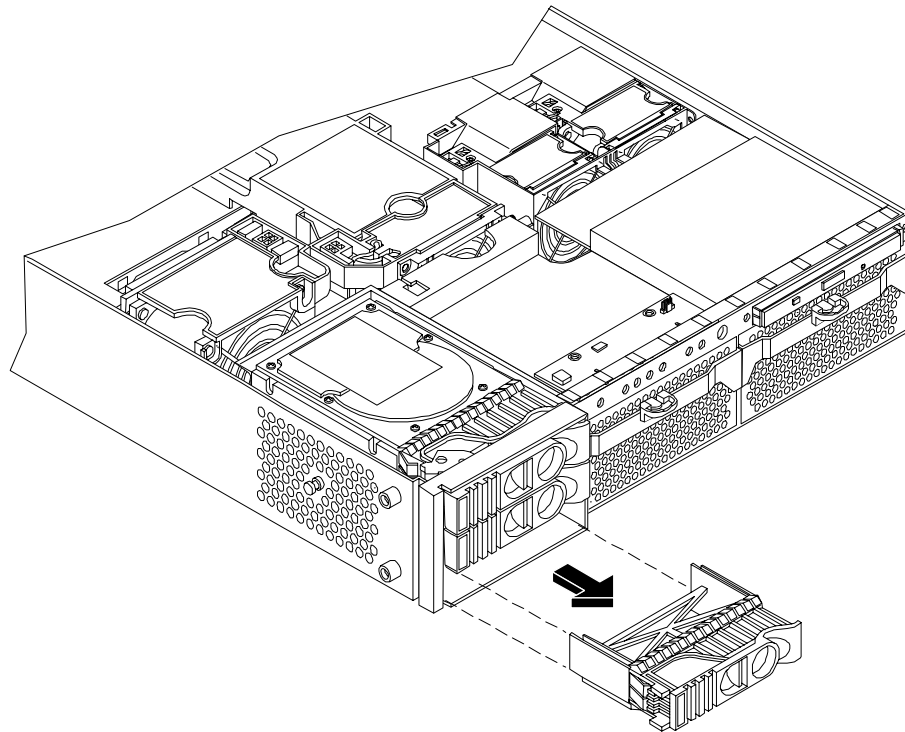
Step 3. Slide the hard disk drive into the slot until it is seated.

Figure 2-23 Disk Drive Installation in Slot 3
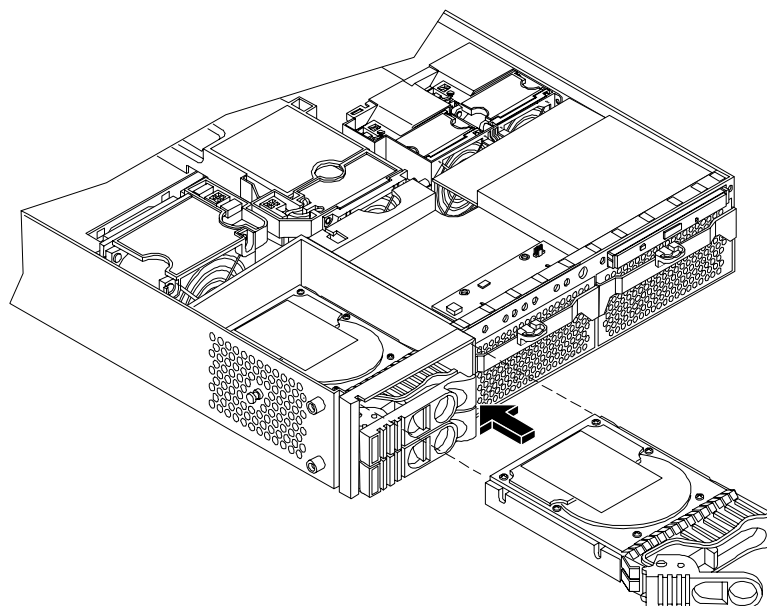
Step 4. Close the drive ejector handle by pushing it down until it clicks.

Step 5. If desired, lock the hard drive in place.

    a. Press the hard drive locking lever down into the locked position.

    b. Replace the cover and bezel. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Figure 2-24 Hard Drive Lock
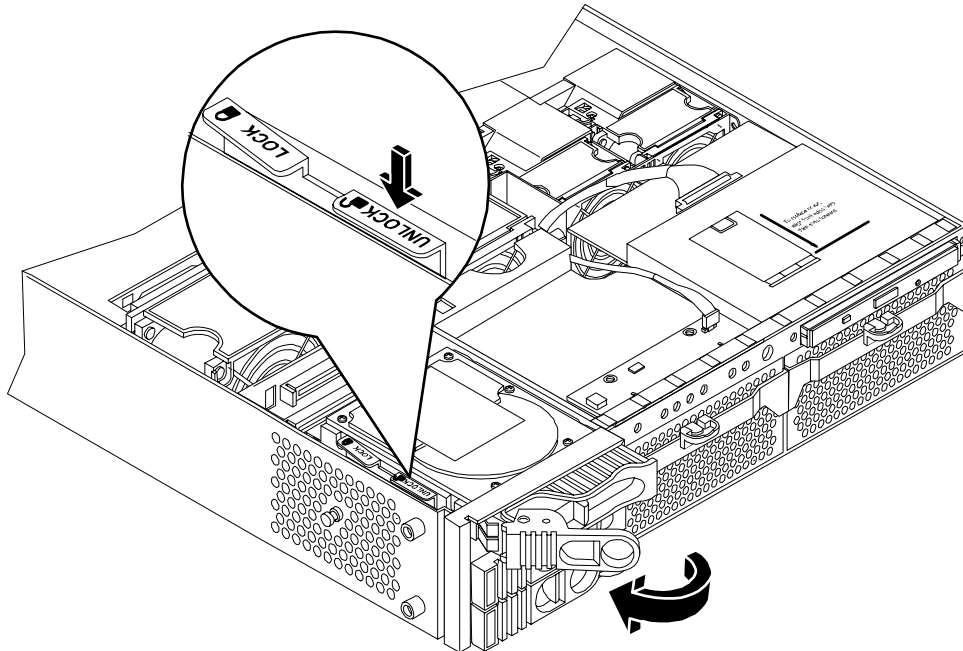
Step 6. Verify the drive installation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the `MP` commands to verify operation

- Use the `BCH` commands to verify operation

- Use diagnostics provided by the offline diagnostic environment to exercise the module added

Step 7. If rack-mounted, slide the HP server back into the rack until it stops.

Step 8. Check the installation of the hard disk drive by powering on the server and checking the virtual front panel and system event log for correct status for the hard disk drive.

Installing a DVD-ROM Drive

Install a DVD-ROM drive behind the front bezel.

WARNING   **Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a removable media drive.**

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning could result in personal injury or damage to equipment.

CAUTION   Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server. Failure to properly complete the steps in this procedure will result in erratic system behavior or system failure. For assistance with this procedure contact your local HP Authorized Service Provider.

Figure 2-25   DVD-ROM Drive Installation
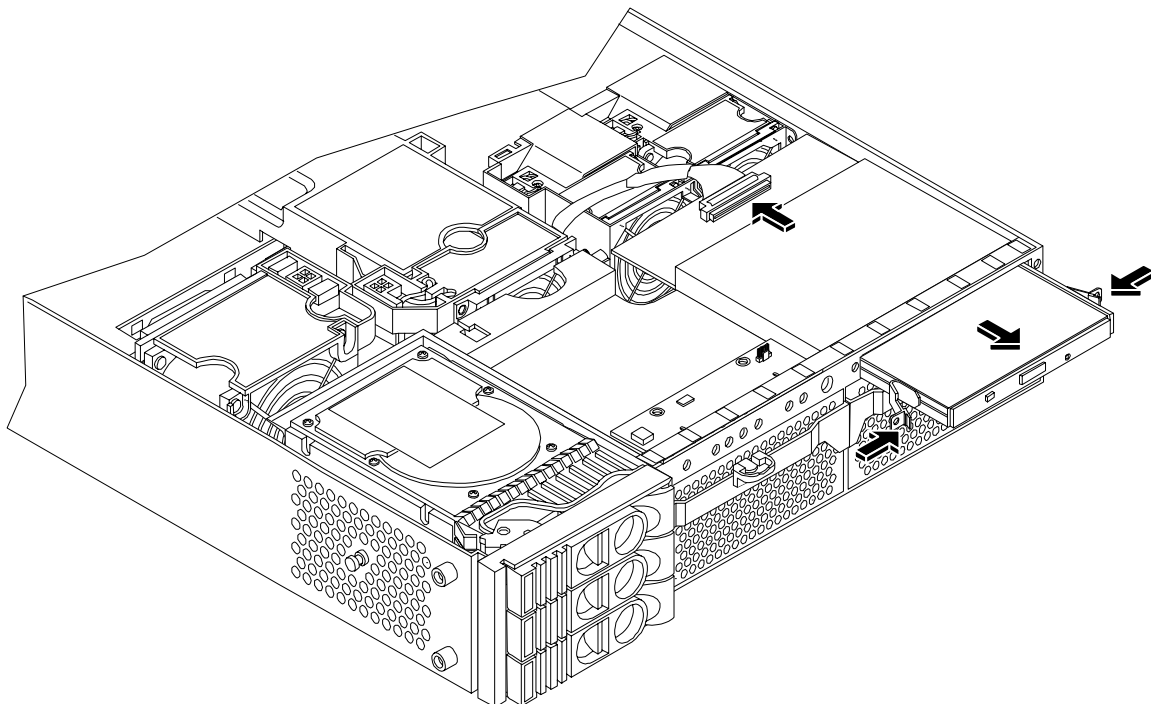
Installing the DVD-ROM Drive

To install a DVD-ROM drive, perform the following steps:

Step 1. Turn off the system and disconnect power and external cables.

Step 2. Remove the front bezel and cover. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Step 3. If a removable media drive has not previously been installed in the server, the drive slot will be covered with a DVD drive filler. Remove the DVD drive filler.

Step 4. Slide the drive into the drive bay until it stops sliding and the retaining clips on both sides of the drive snap into place (Figure 2-25).

Step 5. Connect the IDE cable on the back of the drive (Figure 2-25).

Step 6. Replace the cover and bezel. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Step 7. Reconnect the power and external cables and turn on the system.

Step 8. Verify the drive operation by using the system utilities. (Refer to the Utilities chapter of the *HP9000 rp3410 and rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation

- Use the BCH commands to verify operation

- Use diagnostics provided by the offline diagnostic environment to exercise the newly installed module

Removing and Replacing Airflow Guides

You must remove airflow guides before installing processors or memory. The system has the following airflow guides:

- The processor airflow guide ensures that the proper volume of air for cooling the dual processor module power pods, processor module(s), and voltage regulator module(s) flows over these components. You must remove the processor airflow guide before removing or installing a dual processor module

- The memory airflow guide ensures that the proper volume of air flows over the memory DIMMs to cool them. You must remove the memory airflow guide to access memory DIMMs and sockets

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NOTE   Air flows through the system from front to back.

Figure 2-26   Airflow Guides Locations
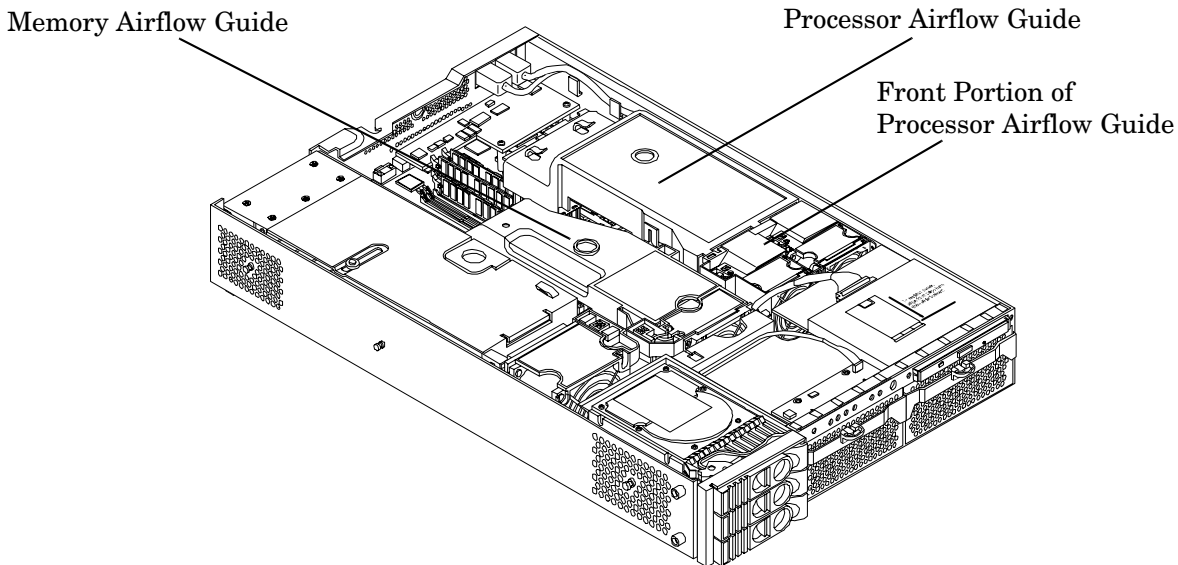
Removing and Replacing the Memory Airflow Guide

Removing the Memory Airflow Guide

Step 1. Turn off the system and disconnect power and external cables.

Step 2. Remove the server chassis cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 3. Grasp the memory airflow guide and lift it out of the system (Figure 2-27).

Figure 2-27 Removing the Memory Airflow Guide
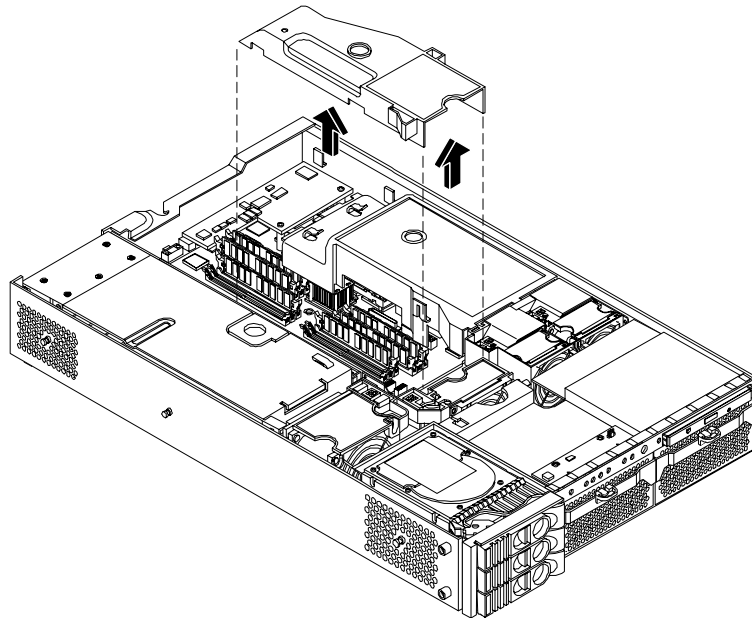
Replacing the Memory Airflow Guide

Step 1. Align the guides on both sides of the airflow guide with the slots on the chassis.

Step 2. Insert the memory airflow guide in the slots.

Step 3. Replace the cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Removing and Replacing the Processor Airflow Guide

Removing the Processor Airflow Guide

Step 1. Turn off the system, disconnect power and external cables.

Step 2. Remove the system cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 3. Remove the IDE cable and power module cables from the processor airflow guide cable clips.

Step 4. Remove the main portion of the airflow guide:

    a. Hold the guide using the opening on top of the guide.

b. At the same time, grasp the back end of the processor airflow guide and lift the guide out of the system (Figure 2-28).

Figure 2-28 Removing the Processor Airflow Guide
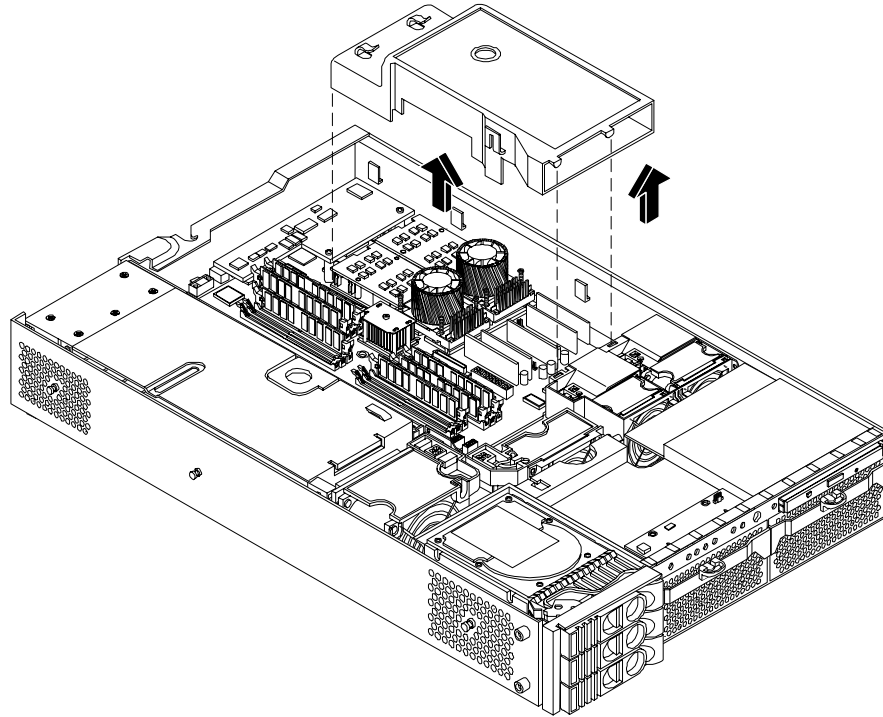
Step 5. Grasp system fan 1A and lift it from its socket (Figure 2-29).

Figure 2-29 Removing Fans 1A and 1B

Fan 1A
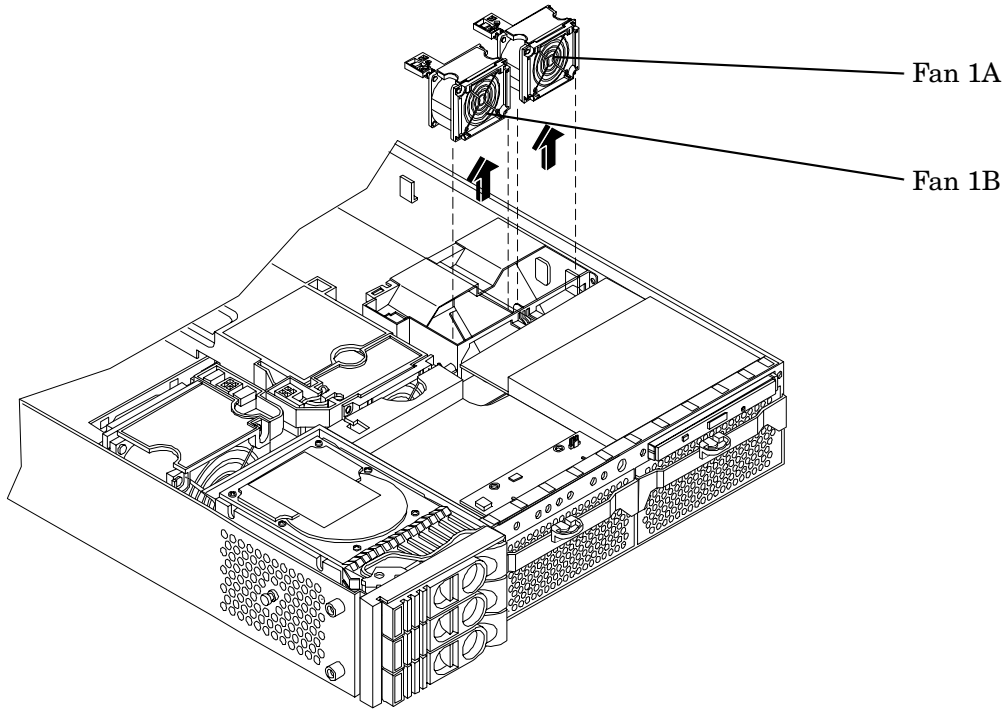
Fan 1B

Step 6. Grasp system fan 1B and lift it from its socket (Figure 2-29).

Step 7. Remove the memory airflow guide. "Removing the Memory Airflow Guide" on page 41

Step 8. Rotate the clip clockwise to release the latch (Figure 2-30).

Figure 2-30 Open the Release Clip
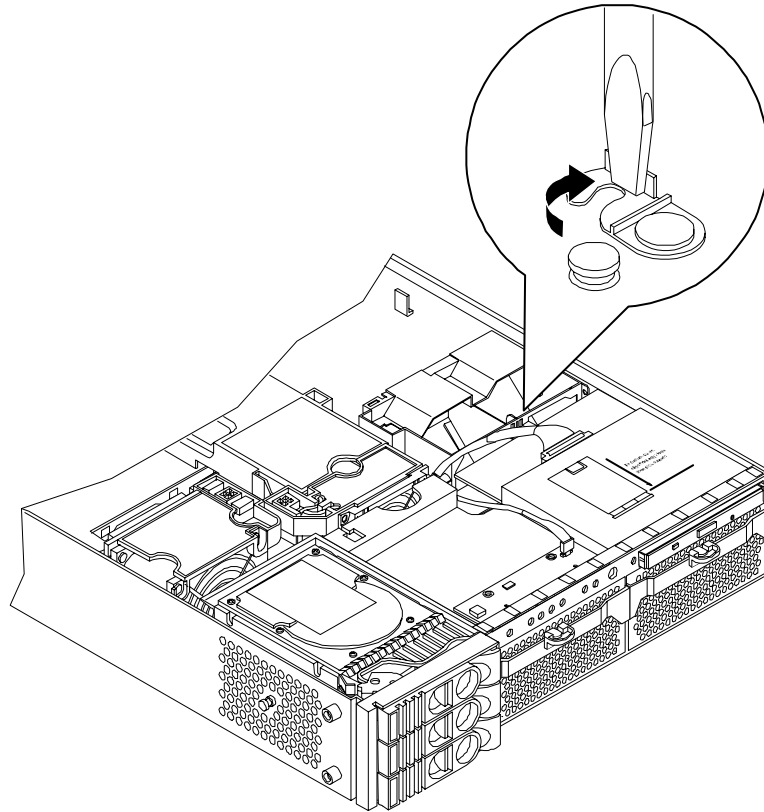
Step 9. Disconnect the power cable connected to the guide from the system board by squeezing the clips.

Step 10. Lift the front portion of the processor airflow guide out of the system (Figure 2-31).

Figure 2-31 Remove the Front Portion of the Processor Airflow Guide
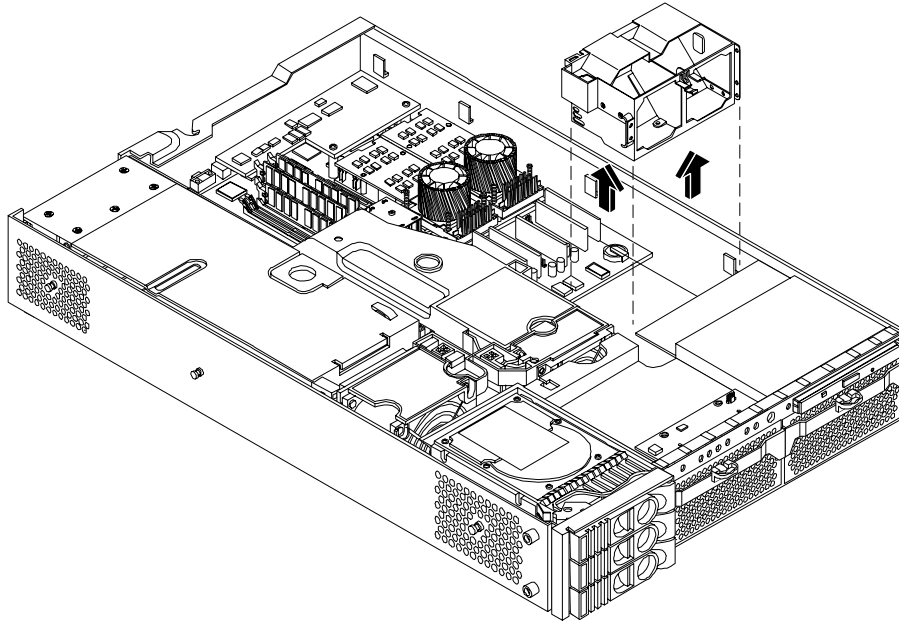
Replacing the Processor Airflow Guide

Step 1. Replace the front portion of the airflow guide:

   a. Align the release latch of the front half of the airflow guide over the release latch post and snap it in place.

   b. Connect the power connector on the front portion of the guide to the connector on the system board.

Step 2. Insert system fans 1A and 1B into their mounting positions.

Step 3. Route the processor turbo fan power cables through the processor heatsink posts so that the cables will not be pinched between the heatsink posts and the processor airflow guide (Figure 2-32).

CAUTION	Turbo fan power cables can be damaged if pinched between the heatsink posts and the processor airflow guide. Ensure that the cables are below the top surface of the heatsink posts before installing the processor airflow guide.

Figure 2-32 Routing the Turbofan Power Cables through Heatsink Posts
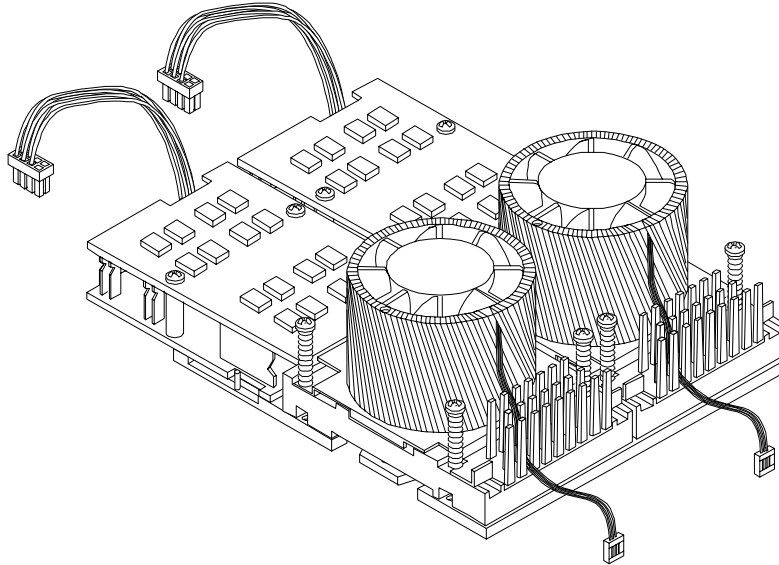
Step 4. Replace the main portion of the airflow guide:

   a. Hold the opening on top of the processor airflow guide.

   b. At the same time, grasp the back end of the airflow guide and insert the airflow guide into the system.

   c. Connect the power module cable.

   d. Place the power and IDE cables in the cable clips.

   e. Insert the two airflow guide retaining tabs into the two slots on the front half of the airflow guide.

   f. Replace the memory airflow guide. "Replacing the Memory Airflow Guide" on page 42

Step 5. Replace the system cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Installing Additional System Memory

Your system has 12 memory sockets for installing DDR SDRAM memory modules. System memory DIMMs are located on the system board.

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing system memory.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

CAUTION	Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

Supported DIMM Sizes

Supported DIMM sizes are 256 MB, 512 MB, 1 GB, 2 GB (HP 9000 rp3440 only), and 4 GB (HP 9000 rp3440 only). If 4 GB DIMMs are used (HP 9000 rp3440), only one configuration (8 X 4 GB in the first eight sockets) is supported. Dissimilar DIMM sizes may be used across the entire system board (except when 4 GB DIMMs are used) but both DIMMs in a pair (first group of four, connectors 0A and 0B of HP 9000 rp3410) and all four DIMMs of any quad must be identical.

Figure 2-33   DIMM Slot Identification
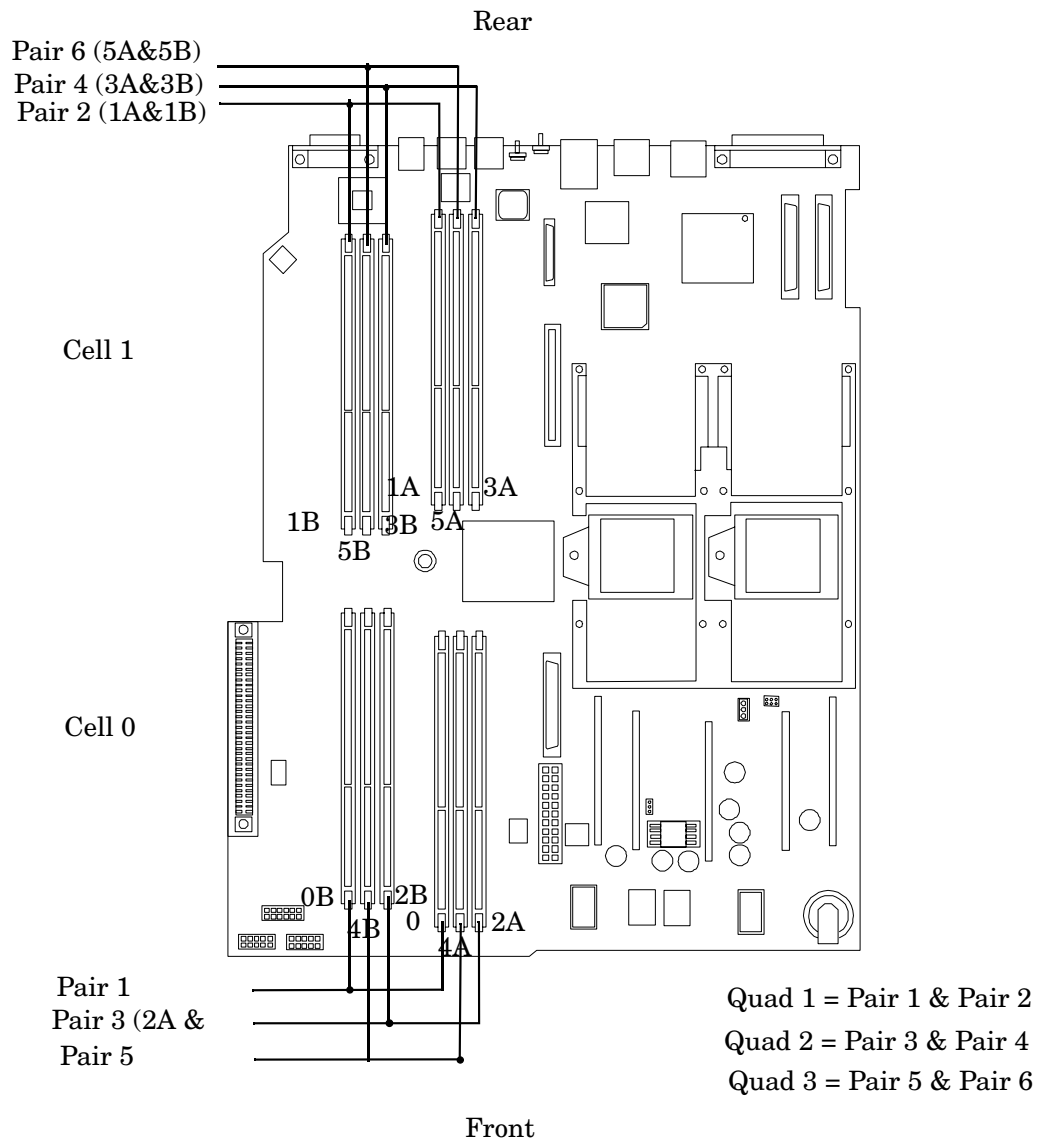
Installing System Memory

rp3410 Memory Configuration

The HP 9000 rp3410 supports DDR SDRAM DIMMs with ECC and chip spare protection. This server has 12 DIMM slots and supports a maximum of six GB of total system memory. Memory usage in the HP 9000 rp3410 server varies with the model designation. In the original server (model A7136A), memory can be installed as one or two pairs in the first quad (group of four). This allows memory configurations of two, four, eight, or twelve DIMMs. In the current server (model A7136B), memory must be installed as quads (groups of four). This allows memory configurations of four, eight, or twelve DIMMs. Thus, the HP 9000 rp3410 server must include a minimum of 512 MB (model A7136A) or 1 GB (model A7136B) and may include up to six GB of memory in combinations of 256 MB, 512 MB, and 1 GB DIMMs. Different size DIMMs may be installed in the server, but all four DIMMs in a quad must be identical.

Memory Loading Rules and Performance Guidelines

- DIMMs must be installed in server load sequence (the first DIMM must be in the first slot, the second DIMM must be in the second slot, and so on)
- A minimum of 512 MB (2 x 256 MB DIMMs in a model A7136A server) or 1 GB (4 x 256 MB DIMMs in a model A7136B server) of memory must be installed in a HP 9000 rp3410 server
- Maximum memory is 6 GB
- A minimum of two DIMMs (one pair) is required in the model A7136A server
- A minimum of four DIMMs (one quad) is required in the model A7136B server
- All DIMMs within a quad must be identical
- Memory can be ordered in amounts of 1 GB (4 x 256 MB), 2 GB (4 x 512 MB), 4 GB (4 x 1 GB), 8 GB (4 x 2 GB), and 16 GB (4 x 4 GB)
- Memory is loaded across both memory busses (two DIMMs on each bus) to ensure maximum bandwidth and performance
- Total memory bandwidth is 8.5 GB/s, split across two 4.25 GB/s memory buses
- Open page memory latency is 80 nanoseconds

rp3440 Memory Configuration

The HP 9000 rp3440 supports DDR SDRAM DIMMs with ECC and chip spare protection. This server has 12 DIMM slots, but maximum system memory is 32 GB due to cooling limitations. Memory must be installed as quads (groups of four). This allows memory configurations of four, eight, or twelve DIMMs. Thus, the HP 9000 rp3440 server must include a minimum of 1 GB and may include up to 24 GB of memory in combinations of 256 MB, 512 MB, 1 GB, and 2 GB DIMMs, or 32 GB of memory consisting of eight 4 GB DIMMs. Different size DIMMs may be installed in the server (except when 4 GB DIMMs are used), but all four DIMMs in a quad must be identical.

Memory Loading Rules and Performance Guidelines

- Minimum memory is 1 GB (4 x 256 MB)
- Maximum memory is 32 GB (8 x 4 GB installed in the first eight slots—the remaining slots must remain empty if 4 GB DIMMs are installed)
- Memory DIMMs must be installed in groups of four (quads)
- All DIMMs within a quad must be identical

- Memory must be loaded in the specific order outlined on the system board

- Memory can be ordered in amounts of 512 MB (2 x 256 MB), 1 GB (4 x 256 MB), 2 GB (4 x 512 MB), 4 GB (4 x 1 GB), 8 GB (4 x 2 GB), and 16 GB (4 x 4 GB)

- Each quad of memory is loaded across both memory buses (two DIMMs on each bus) to ensure maximum bandwidth and performance

- Total memory bandwidth is 8.5 GB/s, split across two 4.25 GB/s memory buses

- Open page memory latency is 80 nanoseconds

The memory subsystem supports chip-spare functionality. Chip spare enables an entire SDRAM chip on a DIMM to be bypassed (logically replaced) in the event that a multi-bit error is detected on that SDRAM.

In order to use the chip spare functionality, only DIMMs built with x4 SDRAM parts can be used, and these DIMMs must be loaded in quads (two DIMMs per memory cell, loaded in the same location in each memory cell).

System Firmware Requirements

If you are using 4 GB DIMMs in a HP 9000 rp3440 server, system firmware must be greater than revision 44.24. Use the BCH command FV, or the MP command SR to display the system firmware revision status. If necessary, use the MP command SR to upgrade system firmware. (Detailed instructions are downloaded with the upgrade.)

Installation Procedure

To install DIMMs, perform the following steps:

Step 1. Turn off the system and disconnect all power and external cables.

Step 2. Remove the system cover. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Step 3. Remove the memory airflow guide. (See "Removing the Memory Airflow Guide" on page 41.)

| **CAUTION** | To ensure that memory modules are not damaged during removal or installation, power off the server and unplug the power cord from the AC power outlet. Wait until the LED on the back of the power supply turns off before removing or installing memory. |

Step 4. Locate the slot into which the DIMM will be installed. Holding the memory module by its left and right edges, insert the module into the socket (Figure 2-34.)

| **NOTE** | The memory modules are keyed and can only be inserted in one direction. When the module is correctly seated, the retainer clips will return to their fully upright position. Snap the clips firmly into place to ensure that the DIMMs are seated properly. |

Step 5. Evenly push down firmly on each end of the DIMM until it seats in the socket. Ensure the extraction levers are in the closed position.

Figure 2-34 Inserting DIMM into Connector
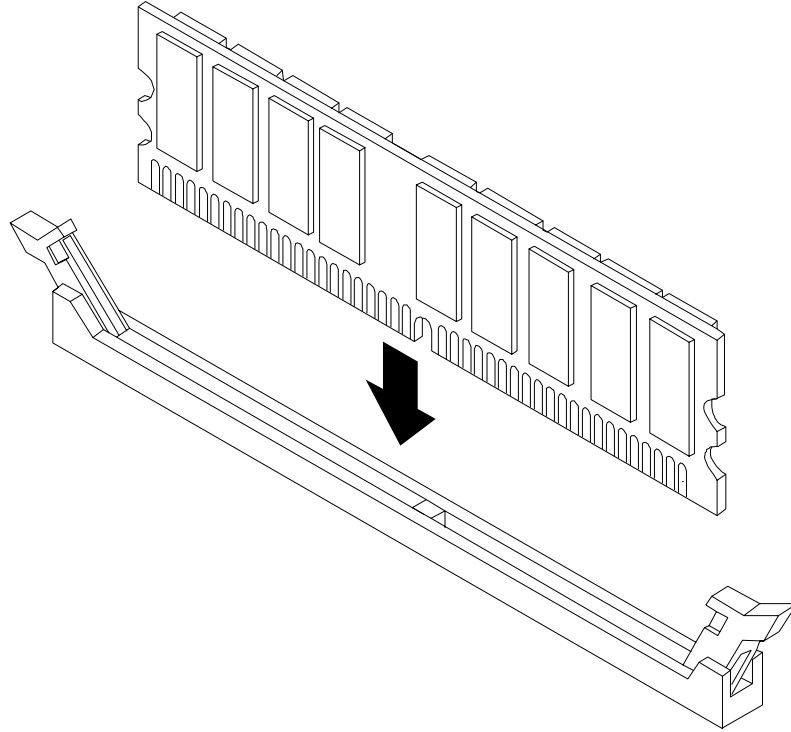
Step 6. Replace the memory airflow guide. (See "Replacing the Memory Airflow Guide" on page 42.)

Step 7. Replace the system cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 8. Reconnect all power and external cables and turn on the system.

Step 9. Verify the memory installation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation

- Use the BCH commands to verify operation

- Use diagnostics provided by the offline diagnostic environment (ODE) to exercise the memory added

Removing and Replacing the PCI Card Cage

Accessory cards are installed in a removable PCI card cage. This section explains how to remove and replace the PCI card cage. Removal is required to install accessory cards.

Removing the PCI Card Cage

To remove the PCI card cage from the server, perform the following steps:

Step 1. Remove the cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 2. Disconnect the cables from the PCI cards.

Step 3. Lift up on the PCI card cage release lever and the back edge of the PCI card cage and lift the PCI card cage out of the system (Figure 2-35).

Figure 2-35 Removing the PCI Card Cage
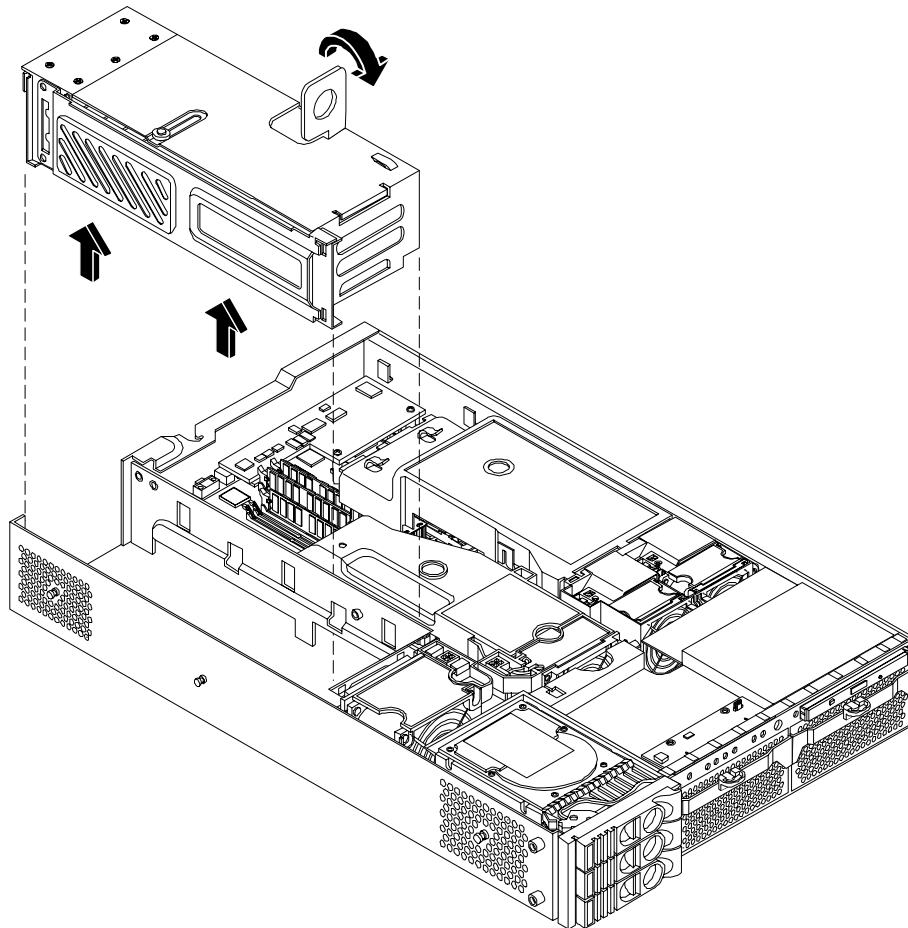
Step   4. Grasp the PCI card cage cover and slide it away from the bulkhead end of the cage, then lift the cover off (Figure 2-36).

Figure 2-36 Removing the PCI Card Cage Cover
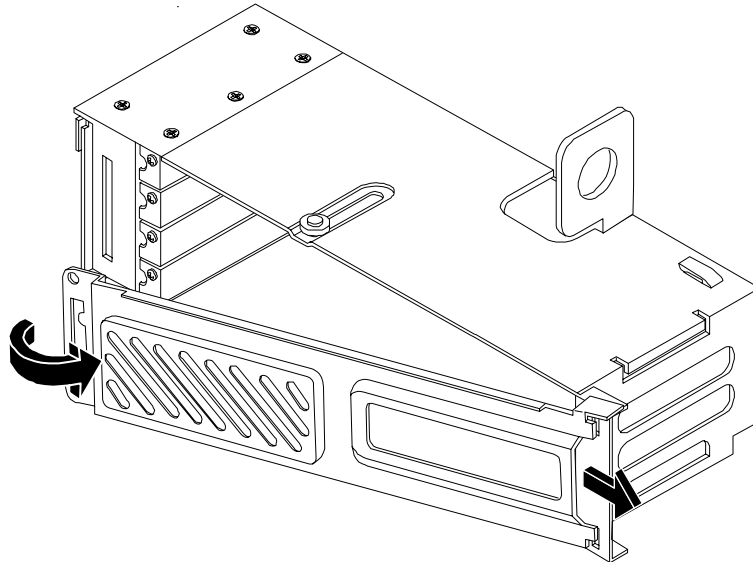
Step   5. Unscrew the bulkhead screw that holds the accessory card holder (if installed) in place.

Step   6. The PCI slots are now accessible for installation of additional cards.

Replacing the PCI Card Cage

To replace the PCI card cage, perform the following steps:

Step   1. Hold the PCI card cage cover in mounting position and slide it toward the bulkhead end of the cage.

Step   2. Hold the PCI card cage above the chassis mounting position, such that the bulkhead end of the cage is toward the rear of the server. (Figure 2-35.)

Step   3. Hold the PCI card cage release lever in the raised position and lower the card cage into the server chassis.

Step   4. Press the PCI card cage release lever into the lowered position to lock the card cage into the server chassis.

Installing PCI Cards

The server may contain up to 4 PCI cards. PCI cards are located in the PCI card cage. The HP 9000 rp3410 server provides two 64-bit, 133 MHz PCI-X card sockets as slots 1 and 2. The HP 9000 rp3440 server provides four 64-bit, 133 MHz PCI-X card sockets as slots 1 through 4.

The HP 9000 rp 3410 and HP 9000 rp3440 servers have the following accessory card sockets:

- Four 64-bit, 133 MHz PCI-X card sockets

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a PCI card.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

CAUTION	Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

Carefully read the following information concerning PCI slot configuration. Inserting a PCI card into a slot that is not configured to accept it may cause operation failure or the PCI card to operate at less than optimum speed. PCI slots are numbered 1 (top of card cage) through 4 (bottom of card cage). See the labels on the rear panel of the chassis for correct PCI slot number identification.

Installing a PCI Card

Step 1. Remove the cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 2. Remove the PCI cage. (See "Removing the PCI Card Cage" on page 53.)

Step   3. Grasp the edges of the PCI card to be installed and evenly press the card into the PCI backplane connector.

Figure 2-37 Installing a PCI Card
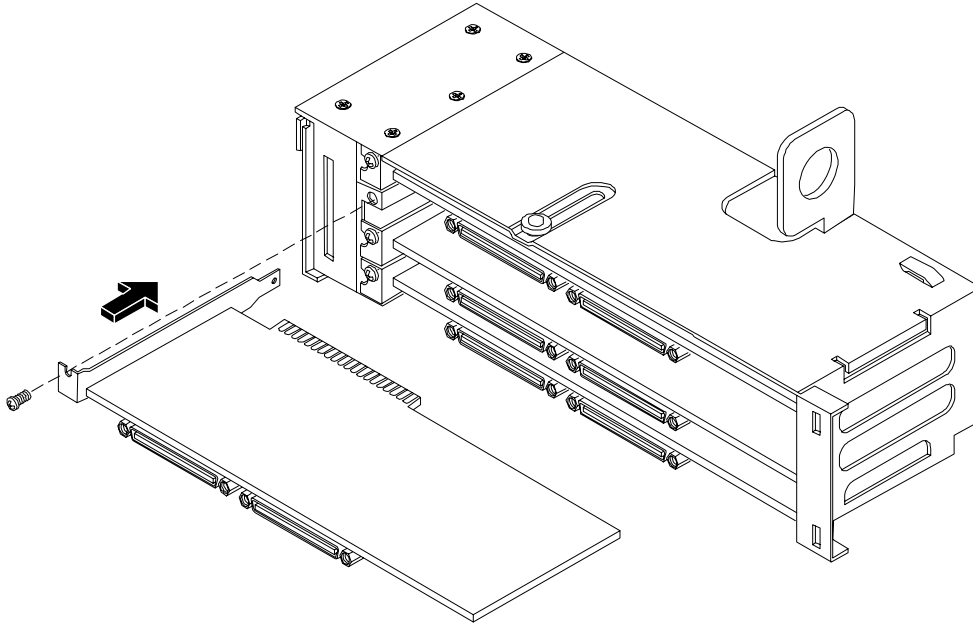
Step   4. Connect any internal cables that are required by the PCI card.

Step   5. Install the accessory card holder(s) and secure in place by tightening the associated bulkhead screw(s).

Step   6. Reinstall the PCI cage. (See "Replacing the PCI Card Cage" on page 54.)

Step   7. Replace the cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step   8. Verify the PCI card installation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation

- Use the BCH commands to verify operation

- Use diagnostics provided by the offline diagnostic environment to exercise the card added

Installing an Additional Power Supply

The supported configuration of the HP 9000 rp3410 and HP 9000 rp3440 servers requires a minimum of one power supply unit (PSU) to be installed. A second, optional hot-swap PSU, may be installed to provide redundant (N+1) capability.

The power supplies in the HP server are hot swappable; that is, if one power supply stops working or exhibits voltage problems, the remaining supply can support the system until the failed unit is replaced. A power supply can be removed and replaced without turning off the system on systems with two power supplies.

CAUTION	Before removing a power supply, make sure the second power supply is functioning properly. The two green LEDs inside the supply must both be lit on the second supply before the failed power supply can be safely removed.

To replace the power supply, perform the following steps:

Step 1. Remove the front bezel from the system and remove the power supply filler panel (Figure 2-38). (See "Removing and Replacing Front Bezel" on page 34.)

Figure 2-38 Removing the Power Supply Filler Panel
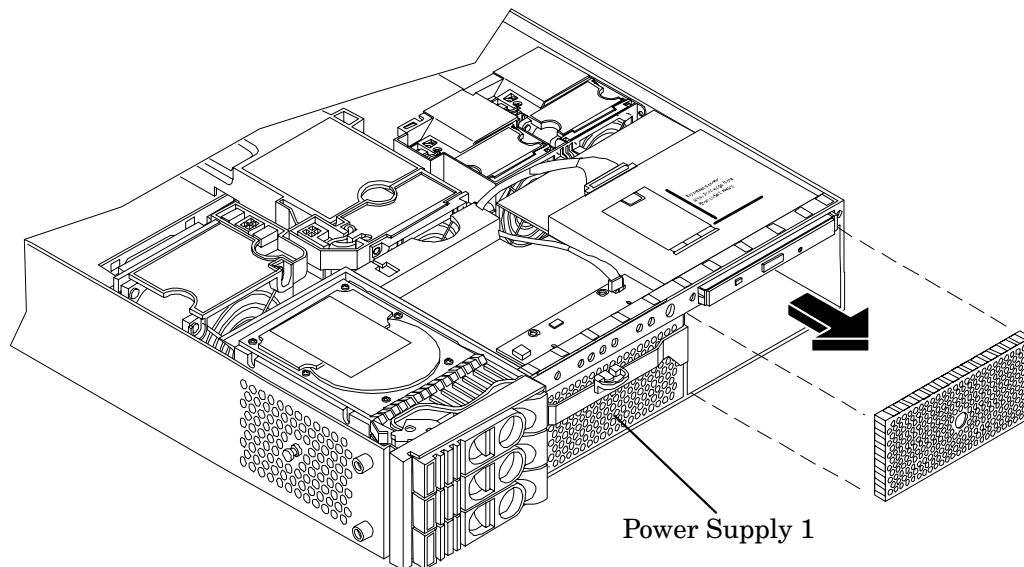
Power Supply 1

Step 2. Open the power supply release lever and slide the power supply into place.

Figure 2-39 Replacing the Power Supply

Power Supply
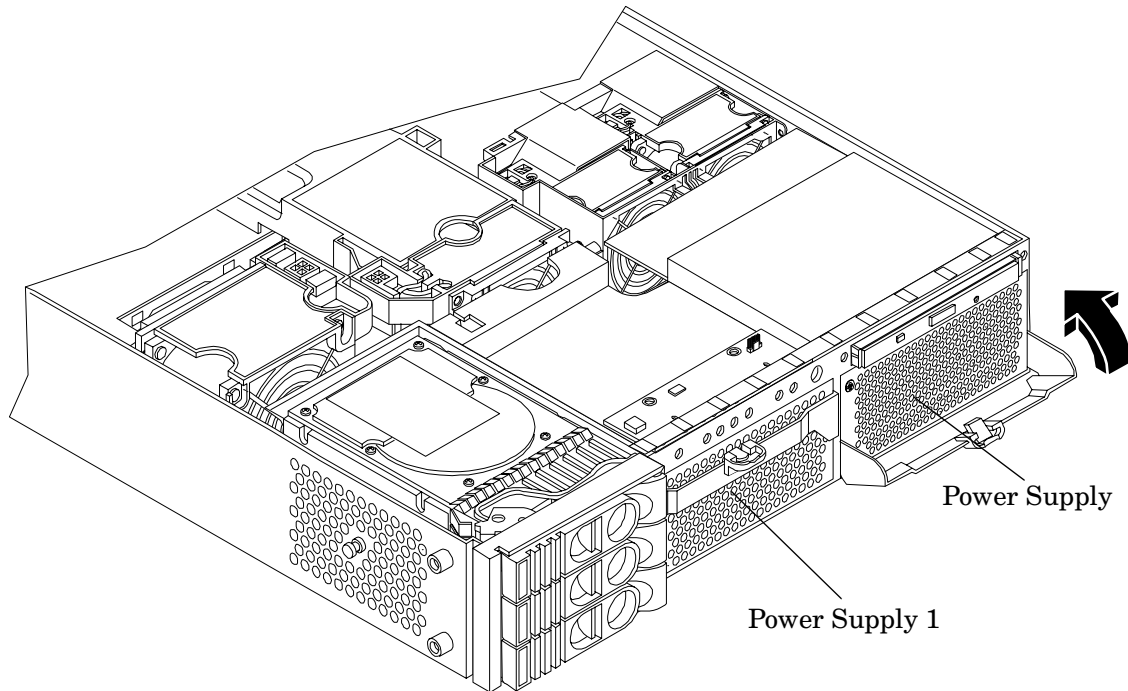
Power Supply 1

Step 3. Push in on the power supply release lever to lock the retaining clip in place.

Step 4. Replace the front bezel. (See "Removing and Replacing Front Bezel" on page 34.)

Step 5. Verify that both power supply LEDs are lit.

Step 6. Use the PS command of the MP to verify power supply operation. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

Installing an Additional Processor Module

This section provides information about installing dual processor modules. The modules are located on the system board which is accessible by removing the system cover.

The HP 9000 rp3410 server supports one processor socket. This socket will accept one dual processor module which contains two 800 MHz CPUs. The HP 9000 rp3410 server 1-way configuration includes two CPUs in a single module, but only one CPU is enabled. (The second CPU can be enabled as part of a server upgrade.)

The HP 9000 rp3440 server supports two processor sockets. Each socket will accept one dual processor module which contains either two 800 MHz CPUs or two 1 GHz CPUs.

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a dual processor module.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

CAUTION	Failure to properly complete the steps in this procedure will result in erratic system behavior or system failure. For assistance with this procedure contact your local HP Authorized Service Provider.
	Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

NOTE	Processor tool kit, P/N 5069-5441 is required for installation of a processor module.

Processor modules are located on the system board. The system board can support either one or two dual processor modules. The CPU0 socket is located at the right of the system board and the CPU1 socket is located at the left of the system board next to the bridge assembly. In a 1-way or 2-way server, the single dual processor module must be installed in the CPU0 socket.

Install a second dual processor module as follows:

Step 1. Turn off the system and disconnect all power and external cables.

Step 2. Remove the cover. (See "Removing and Replacing System Covers and Bezels" on page 25.)

Step 3. Remove the memory airflow guide. (See "Replacing the Memory Airflow Guide" on page 42.)

Step 4. Remove the processor airflow guide. (See "Removing the Processor Airflow Guide" on page 42.)

Step 5. Unlock the dual processor module locking mechanism using the CPU install tool (2.5mm Driver or Allen Wrench). Insert the tool into the hole that runs down through the edge of the heatsink and rotate the special processor tool 180 degrees counterclockwise. Verify that the dual processor module socket locking mechanism is rotated into the unlocked position (Figure 2-40).

Figure 2-40 Unlocking the Dual Processor Module Locking Mechanism

CPU Install Tool
(2.5mm Driver or
Allen Wrench)
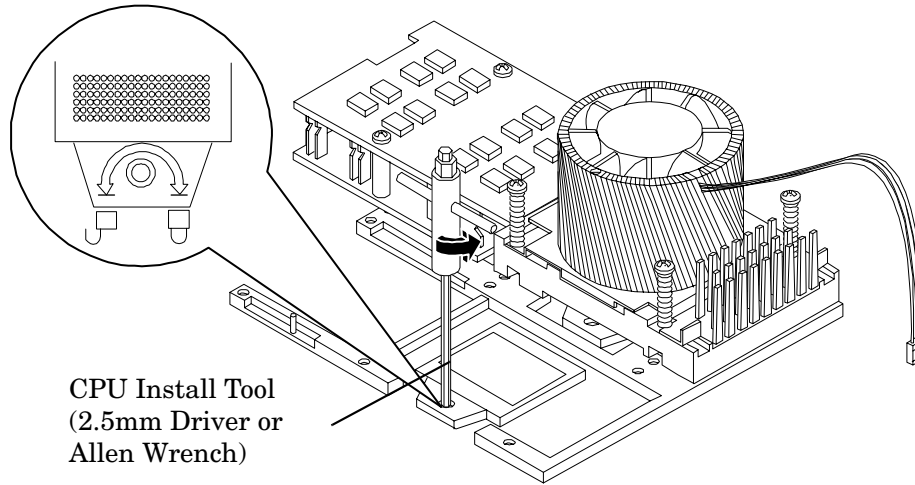
Step 6. Remove any protective packaging from the processor module.

NOTE	Protective covers may be installed to protect connector pins. These covers can be saved for future use.

Step **7.** Use the four locator posts on the heatsink and the turbo fan power cable to properly align the fan and dual processor module on the system board. The four locator posts will fit in locator holes on the system board processor module mount. The turbo fan power cable must be positioned so that it is located on the side of the heatsink that faces the front of the system.

Figure 2-41 Aligning the Processor Module
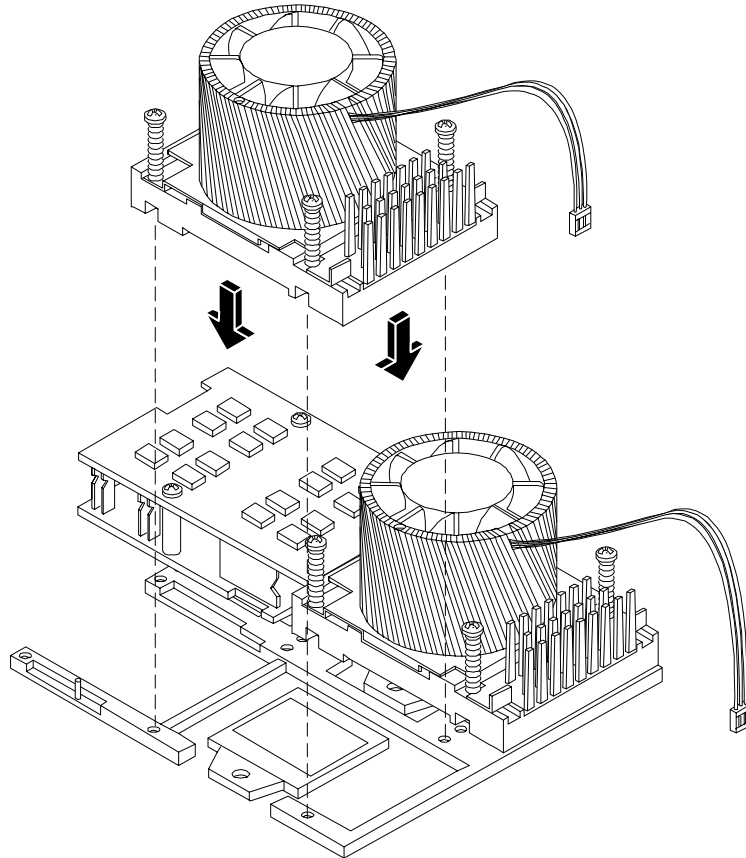
Step 8. Use the special CPU install tool (2.5mm driver or Allen Wrench) to lock the dual processor module in place on the system board. To do this, insert the CPU install tool into the hole that runs down the side of the heatsink and rotate it clockwise 180 degrees (Figure 2-42).

Figure 2-42 Locking the Dual Processor Module in Place

CPU Install Tool
(2.5 mm Driver/Allen
Wrench)
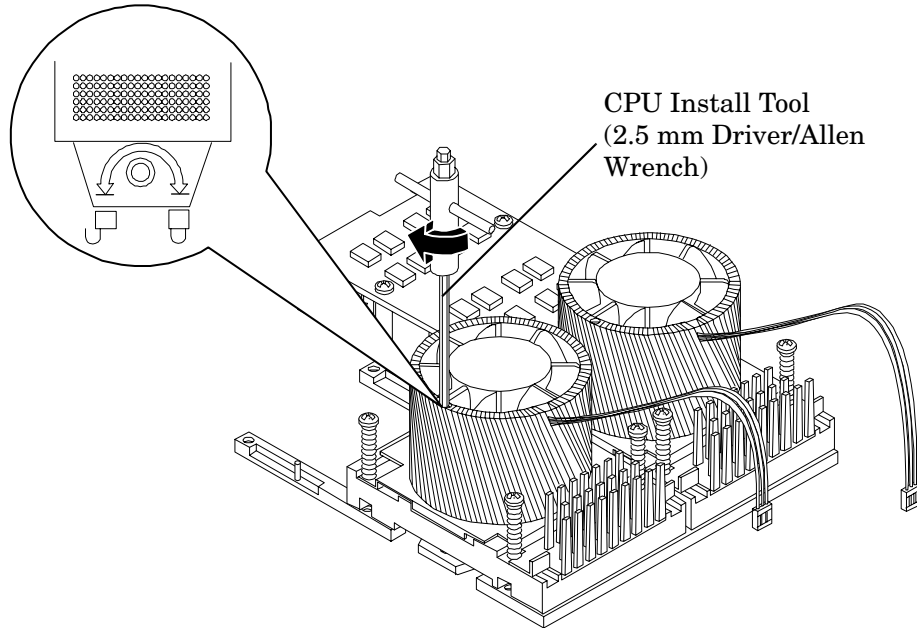
Step 9. Slide the sequencing retainer plate toward the front of the system (Figure 2-43).

Figure 2-43 Slide the Sequencing Retainer Plate
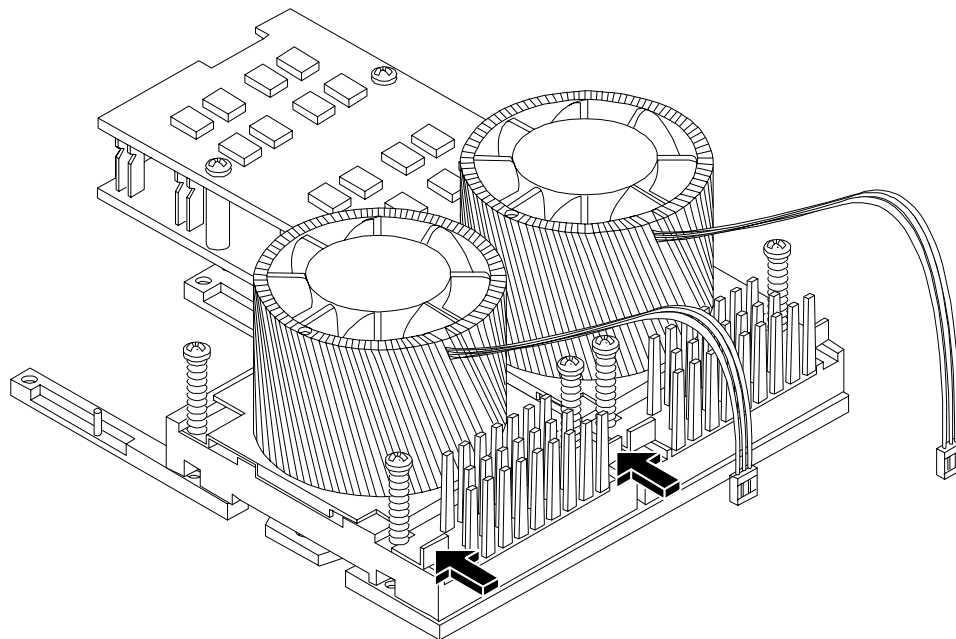
Step 10. Screw in the four heatsink captive screws. Tighten the screws in a criss-cross pattern.

Figure 2-44 Secure the Captive Screws

CPU Install Tool
(Torx T15)
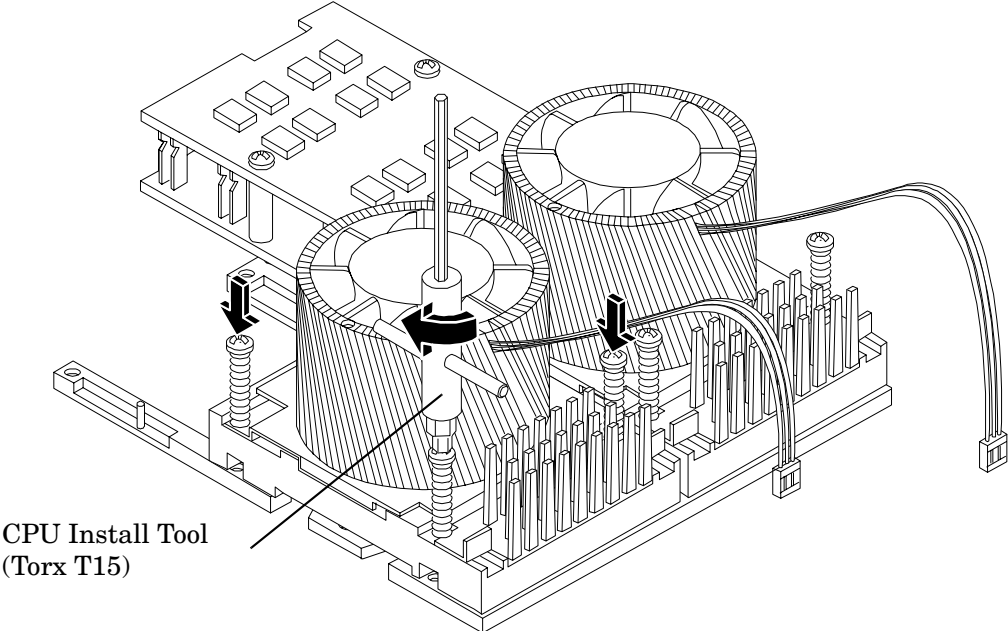
Step 11. Locate the two power pod module shims on the system board. (On systems delivered with only one dual processor module installed, the power module shims are held in place by screws with plastic spacers over the threads.) Remove the holding screws and discard the plastic spacers. Retain the screws for use when installing the power module.

Figure 2-45 Power Module Shims

Screws

Spacers

Shims
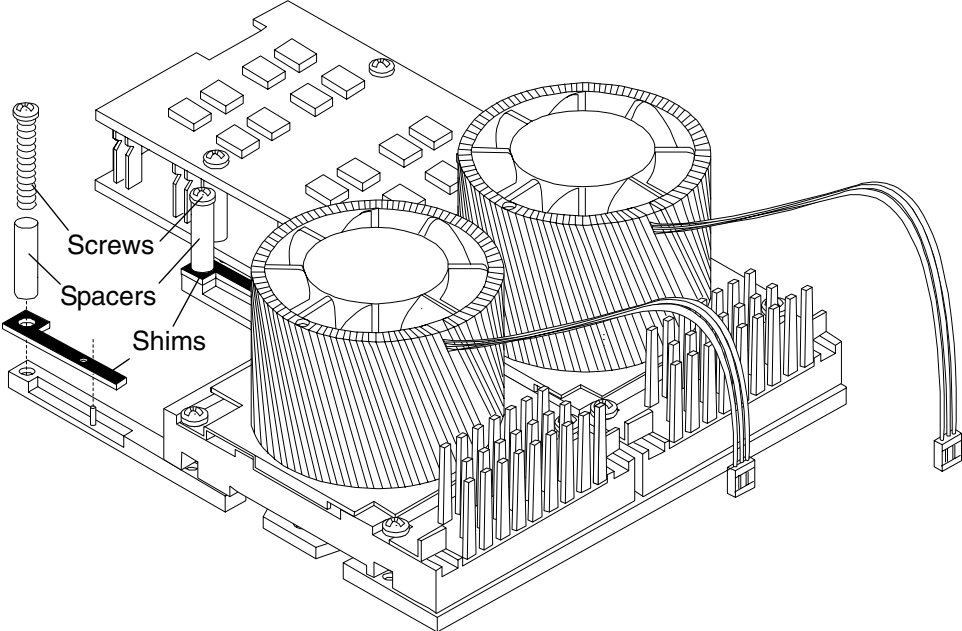
Step 12. Slide the power pod module on the system board's metal mounting bracket so that the power pod module connector connects with its connector on the processor module (Figure 2-46).

Figure 2-46 Aligning the Processor Module Power Pod
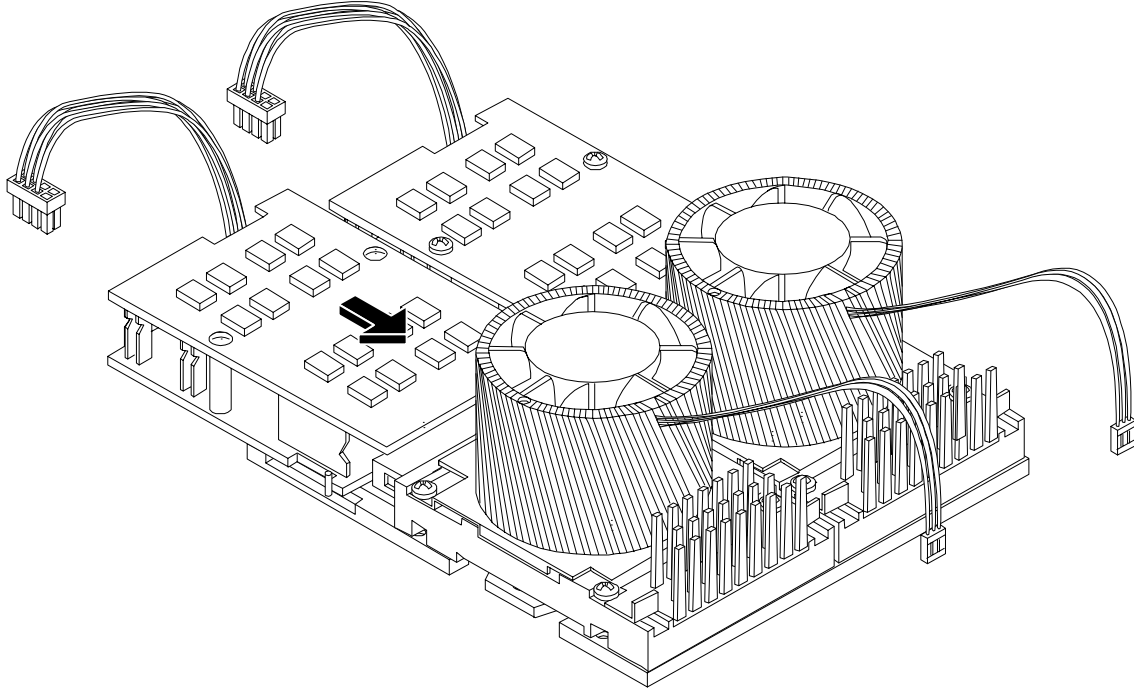
Step 13. Align the two mounting screw holes on the power pod module with the screw holes in the shims on the system board's metal mounting bracket. Screw in the power pod module mounting screws (Figure 2-47). (Use the screws removed in step 11.)

Figure 2-47 Install the Processor Module Power Pod Mounting Screws
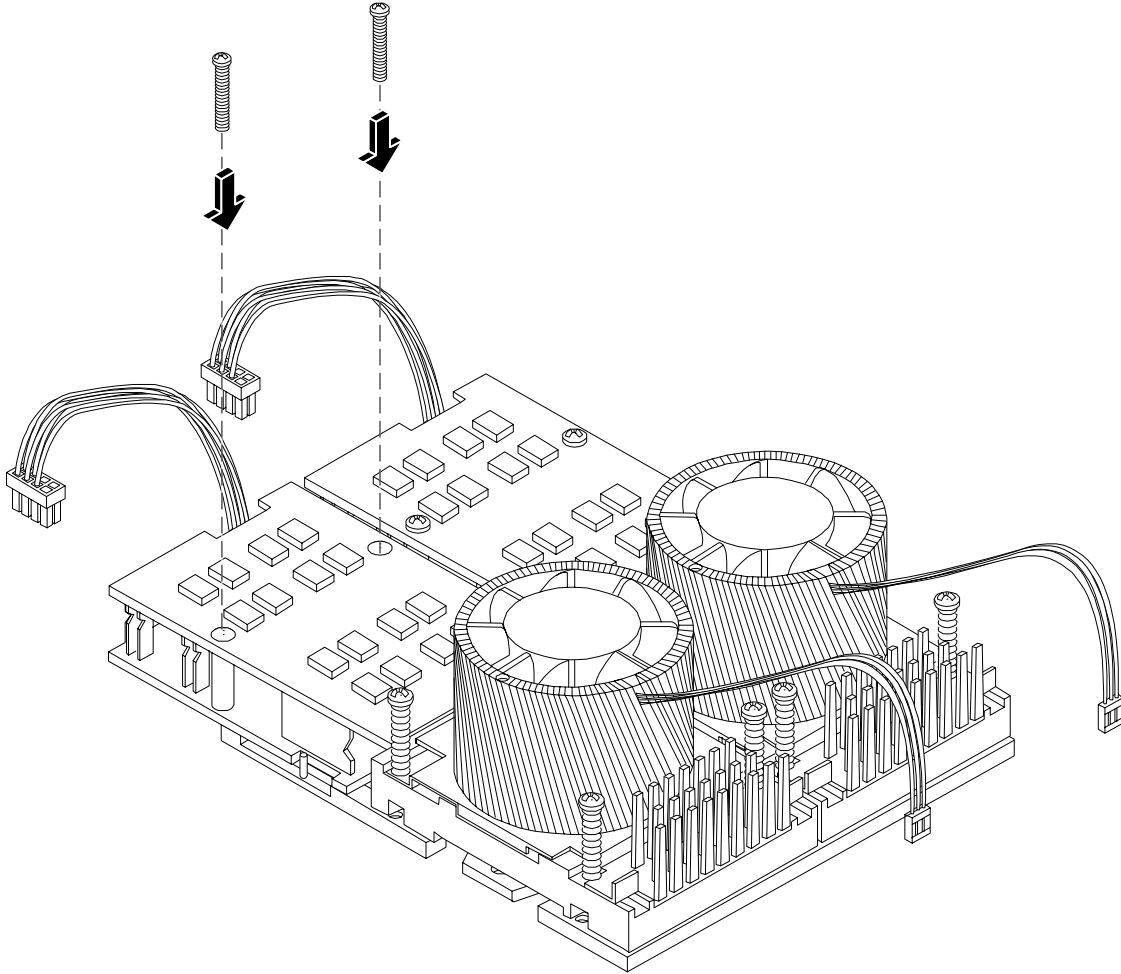
Step 14. Connect the power pod cable to the power connector on the system board.

Figure 2-48 Connecting the Power Pod Cable
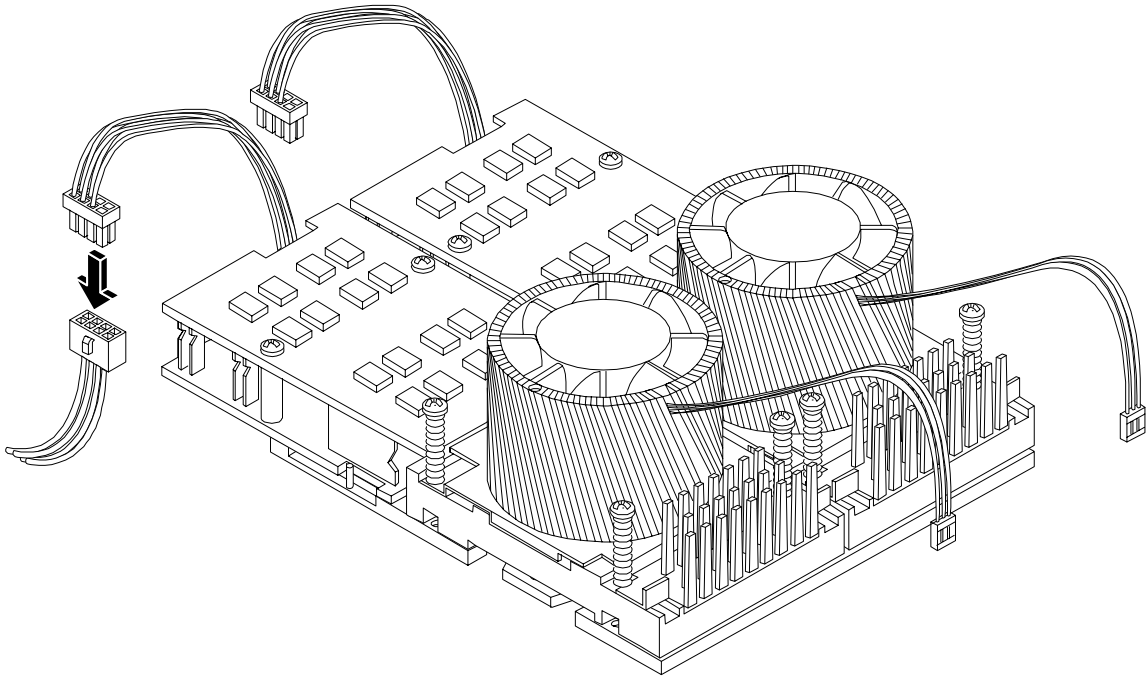
CAUTION	Turbo fan power cables can be damaged if pinched between the heatsink posts and the processor airflow guide. Ensure that the cables are below the top surface of the heatsink posts before installing the processor airflow guide.

Step 15. Route the turbo fan power cables through the heatsink posts so that the cables will not be pinched when the processor airflow guide is set in place (Figure 2-49).

Figure 2-49 Routing the Turbofan Power Cables through Heatsink Posts
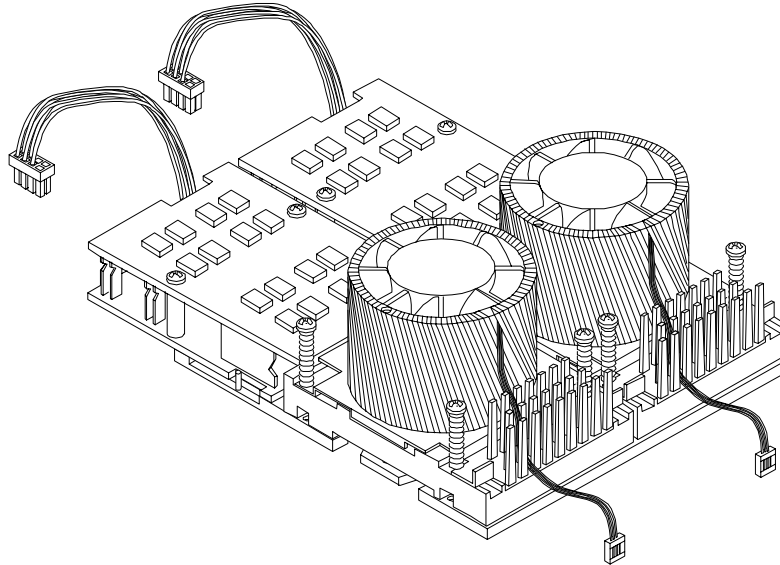
Step 16. Connect the turbo fan power cable to the system board.

Step 17. Replace the processor airflow guide. (See "Replacing the Processor Airflow Guide" on page 46.)

Step 18. Replace the memory airflow guide. (See "Replacing the Memory Airflow Guide" on page 42.)

Step 19. Replace the cover. (See "Removing and Replacing the Metal Cover" on page 26.)

Step 20. Reconnect power and external cables and turn on the system.

Step 21. Verify processor installation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation

- Use the BCH commands to verify operation

- Use MAKODIAG provided by the offline diagnostic environment to exercise the processor added

Replacing the System Battery

The system has two batteries. The main system battery is located on the system board. The other battery is located on the underside of the iLO manageability card. Refer to the Removing and Replacing Internal Components chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Maintenance Guide* for additional information on the iLO manageability card battery.

Battery Notice

This product contains a Lithium battery (P/N 1420-0386).

WARNING	**Lithium batteries may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire. Failure to observe this warning could result in personal injury or damage to equipment.**

Replace only with the identical or equivalent battery. Follow the manufacturer's recommendations. Dispose of used batteries according to the manufacturer's instructions.

Figure 2-50   Replacing the System Battery
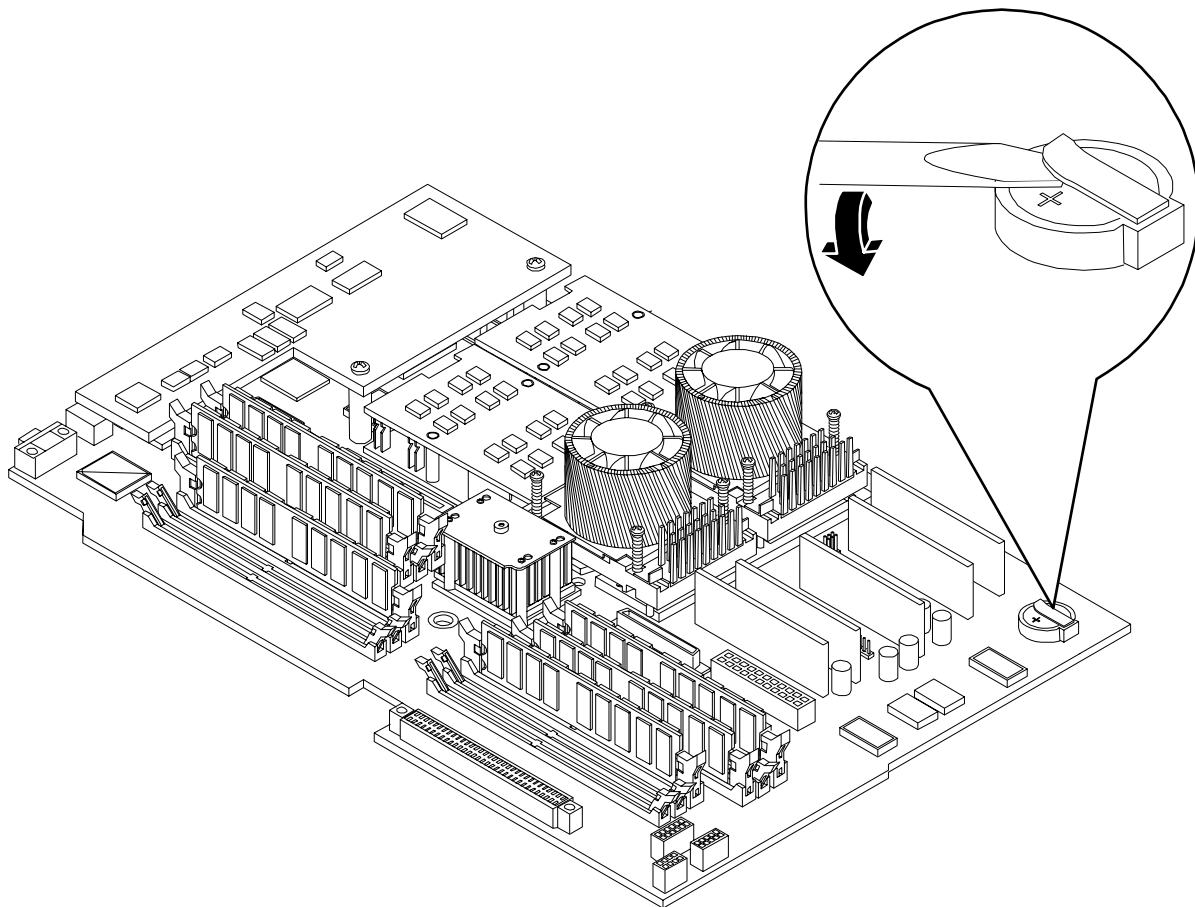
Replacing the System Battery

Step 1. Turn off the system and disconnect power and external cables.

Step 2. Remove the cover. (See "Removing and Replacing System Covers and Bezels" on page 25 for instructions.)

Step 3. Remove the memory airflow guide (See "Removing and Replacing the Memory Airflow Guide" on page 41.)

Step 4. Remove the processor airflow guide, the front portion of the processor airflow guide, and fans 1A and 1B (See "Removing and Replacing the Processor Airflow Guide" on page 42.)

Step 5. Lift up the battery retaining clip with a flat-head screwdriver and push on the back of the battery to remove the battery from its holder (Figure 2-50).

Step 6. Lift up on the battery holder retaining clip with a flat-head screwdriver and slide the battery into the holder. The positive (+) terminal of the battery faces up.

CAUTION   Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip may damage the clip.

Step 7. Replace the cover. (See "Removing and Replacing System Covers and Bezels" on page 25 for instructions.)

Step 8. Reconnect power and external cables and turn on the system.

Step 9. You must reset the system time and date using the BCH date command. Once you have set the time and date, turn off the system, unplug the power cord, and wait for a minute before turning it back on. Execute the date command again. If the time and date are now correct, you have installed the battery correctly.

Configuring the HP 9000 rp3410 or HP 9000 rp3440 Server

Configuring the HP 9000 rp3410 or HP 9000 rp3440 server requires the use of the system utilities to set up user-desired configuration parameters.

In order to configure the system, the following utilities are available:

- Boot Console Handler (BCH)
- Management Processor (MP)

The capabilities of these utilities and their use is described in the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide*.

3 Troubleshooting

This chapter provides troubleshooting instructions for your HP 9000 rp3410 or HP 9000 rp3440 server.

Information to Collect Before You Contact Support

Before you contact HP support, you should:

Step 1. Check information on troubleshooting and attempt to solve the problem. See Chapter 3, "Troubleshooting."

- Note failure symptoms and error indications (LEDs and messages) by checking the SEL and FPL logs

- Try to determine precisely what did or did not happen

Step 2. Collect the following information:

- The model number of your server (for example, rp3410)

- The product number of your server. This is found on the identification label, which is located at the front of the unit (typically A7136A, A7137A, and so on)

- The serial number of your server. This is found on the identification label

Step 3. Become familiar with your system configuration:

- Are you using the LAN, RS232, or Web interface to monitor the server?

- How many processors, DIMMs, and PCI cards have been installed?

- What versions of processor, memory, and PCI cards are used and where are they installed?

- What accessories are installed?

Step 4. Determine the following:

- Which firmware versions are in use?

- When did the problem start?

- Have recent changes been made to the system?

- Which operating system and version is in use?

Troubleshooting Methodology

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a removable media drive.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

CAUTION	Do not operate the HP server for more than 5 minutes with any cover (including disk drives) removed. If you are hot-swapping a fan, reinstall the cover within 5 minutes to prevent overheating. Damage to system components may result due to improper cooling airflow.

This chapter provides limited information to support troubleshooting during installation. Refer to the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for detailed troubleshooting information and instructions for using the MP and online or offline troubleshooting tools.

Using the Front Panel Power Button

The server power button on the front panel operates differently, depending on how long the button is held in and on what the system is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the system. Power button functions are described in the following table.

Table 3-1   Power Button Functions

System State	Switch Pressed Time	Result
Power connected to power supplies—system power off	1 second or less	System power on
	More than 1 second	No effect
System at ISL	Less than 1 second	No effect
	More than 1 second but less than 5 seconds	Not used. This selection initiates E-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	More than 5 seconds	Hard shutdown
System at BCH	Less than 1 second	Hard shutdown
	More than 1 second but less than 5 seconds	Not used. This selection initiates E-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	More than 5 seconds	Hard shutdown

Table 3-1   Power Button Functions (Continued)

System State	Switch Pressed Time	Result
Power on—OS shut down	Less than 1 second	No effect
	More than 1 second but less than 5 seconds	Not used. This selection initiates E-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	More than 5 seconds	Hard shutdown
OS running	Less than 1 second	No effect
	More than 1 second but less than 5 seconds	Not used. This selection initiates E-buzzer functions that are not supported in the HP 9000 rp3410 and HP 9000 rp3440 servers
	More than 5 seconds	Hard shutdown

Troubleshooting Using LEDs

If you suspect a hardware failure during installation, the power and system LEDs, located on the front control panel, will help you identify the problem. The following sections describe their functions. You may want to back up your data or replace a component before it fails.

The boot process will be monitored by the MP. With the current MP functionality, the four diagnostic LEDs are disabled (always off). You can monitor server operation from a console using the MP.

Figure 3-1   Control Panel LEDs
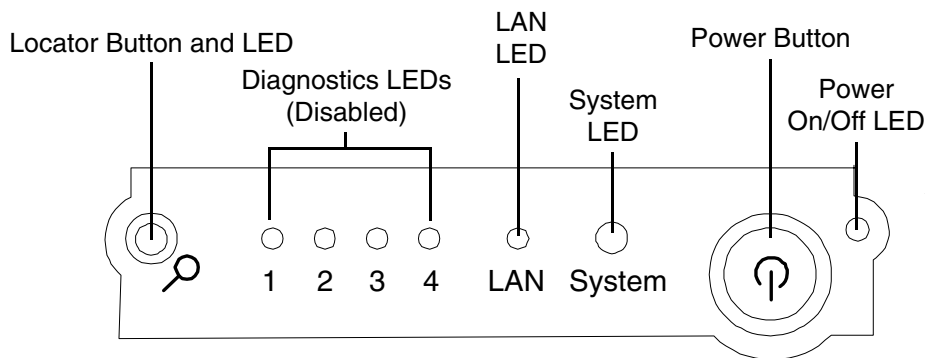
Power and System LEDs

The Power and System LEDs indicate the state of the system. When the system LED is blinking yellow or red, a problem exists.

Table 3-2   System LED States

System LED	State
Off	AC power off if Power LED is off
Solid green	Running OS
Blinking green	Booting or running BCH
Blinking yellow (1/sec.)	Attention: Alerts of levels 3–5 detected in the MP logs The LED will turn off once the event log has been read
Blinking red (2/sec.)	Fault: System Alert 7 detected, LED will blink until the problem is resolved and the system boots successfully Fatal hardware error detected by BMC, LED will blink until problem is corrected

For system alerts of levels 3–5, you can clear the attention condition on the LED by accessing the logs using the `sl` command available in the MP command mode.

You can clear the fault condition for system alerts of level 7 by resolving the problem and cycling power. See the SL error logs for additional error information.

NOTE	Always check the MP status logs in the case of a blinking yellow or red System LED before replacing any hardware.

LAN LEDs

The front panel LAN LED indicates the system is communicating over the Gigabit or system management LAN:

- Blinking green; the system is communicating over the LAN

- Solid green; LAN link is established; no current LAN activity

- Not green; no LAN cable attached; LAN network dead or the system is off

10/100/1000 LAN LEDs are on the rear panel:

The following table lists the 10/100/1000 Base-T ethernet LAN connector LEDs.

Table 3-3   10/100/1000 Base-T Ethernet LAN Connector LEDs

LED	Description
1000BT	Blinking green, the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link
100BT	Blinking green, the 100 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link
10BT	Blinking green, the 10 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link
Activity	Blinking green, LAN activity

Four iLO manageability card LAN LEDs are also on the rear panel:

Table 3-4   iLO Manageability Card LAN LEDs

LAN LED	Location	Color	State
Self-test	Top	Yellow	MP running self-test or error
		Off	MP has booted
10BT	2nd from top	Green	10BT link established
		Blinking green	10BT activity
		Off	No link or 100BT link
100BT	2nd from bottom	Green	100BT link established
		Blinking green	100BT activity

Table 3-4   iLO Manageability Card LAN LEDs (Continued)

LAN LED	Location	Color	State
		Off	No link or 10BT link
Standby Power	Bottom	Green	Standby power on
		Off	Standby power off

Where to Get Help

HP customer care will help you solve server problems and, if necessary, initiate appropriate service procedures.

Support is available on the Web and by phone.

For information on contacting the HP IT Resource Center (ITRC) near you, go to http://www.itrc.hp.com.

Online Support

To contact HP Customer Support online, refer to the *Worldwide Limited Warranty and Technical Support Guide* or visit us at http://www.hp.com/go/bizsupport. On our Web page, enter the server model number (rp3410 or rp3440).

The following information is available on this Web site:

*   Software and firmware updates
*   The latest drivers and utilities
*   Additional documentation

Phone Support

To contact HP customer support by phone, go to the HP IT Resource Center (ITRC) near you, at http://www.itrc.hp.com. Local phone numbers are listed in your native language for help.

4 Cable Connections

AC Input Power

The HP 9000 rp3410 server has one power supply unit (PSU) installed in the front of the server. The HP 9000 rp3440 server comes with two PSUs installed in the front of the server. Each PSU has one AC input connector at the rear of the server. The input for each connector is rated for 100 to 240 VAC at 13 amps.

WARNING	**Ensure that the system is powered-down and all power sources have been disconnected from the server prior to removing or replacing a removable media drive.**
	Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.
	Failure to observe this warning could result in personal injury or damage to equipment.

Figure 4-1   HP 9000 rp3410 and HP 9000 rp3440 Server (rear view)
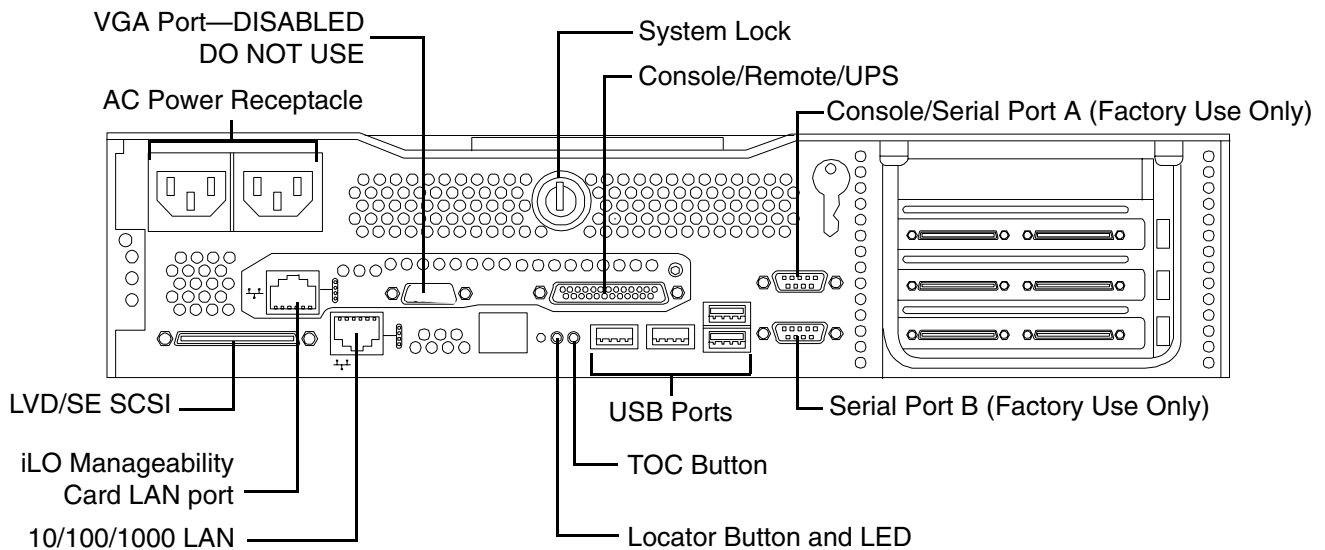
Core I/O Connections

Each HP 9000 rp3410 and HP 9000 rp3440 server core I/O includes:

- Four USB ports

- Two 9-pin serial ports (Console A and Serial B—factory use only)

- One Management Processor (MP) I/O interface

  — One 10/100 management LAN-RJ45

  — One 25-pin serial, console/remote/UPS

- LVD/SE SCSI port—available on rp3440 server only

  — The SCSI HBA board is required to attach SCSI external mass storage to the system

- LAN connection

  — One 10/100/1000 LAN—RJ45

- One 15-pin VGA port—this port is currently disabled. DO NOT USE THIS PORT. For graphics capability install the accessory graphics PCI card, P/N A6150

Management Processor (MP)

Integrated Lights-Out (iLO) offers remote server management through an independent management processor (MP). It provides a way for you to connect to a server and perform administration or monitoring tasks for the server hardware. iLO is available whenever the system is connected to a power source, even if the server main power switch is in the off position.

iLO controls power, reset, and Transfer of Control (TOC) capabilities; provides console access; displays and records system events; and can display detailed information about the various internal subsystems. iLO also provides a virtual front panel that you can use to monitor system status and see the state of front panel LEDs. All iLO functions are available through the server LAN and the local RS-232 and remote RS-232 ports. Access to local and remote ports, telnet, and secure shell (SSH) is through the iLO text interface, while Web access is through a graphical user interface (GUI).

iLO was introduced into most Integrity Entry Class servers in late 2004. Prior to that, embedded remote server management was referred to as MP functionality. All legacy MP functionality has been carried forward and combined with new features, all under the heading of "iLO". Therefore, "iLO" and "MP" mean the same thing for Entry Class servers.

Once you update the firmware to version E.03.13, the following features in the Integrated Lights-Out MP are activated:

- Always-on capability: iLO is active as long as the power cord is plugged in
- Multiple access methods: Local, remote, telnet, and SSH use the iLO text interface. Web access uses a GUI.
    - Local Serial Port: Use a terminal or laptop computer for direct connection.
    - Remote/Modem Serial Port: Use a dedicated modem RS-232 port and external modem.
    - LAN: Use telnet, Web, or SSH to access iLO LAN.
- Remote power cycle; power on or power off; reset
- Mirrored console: The system console output stream is reflected to all connected console users, and any user can provide input.
- Independent, non mirrored sessions (from local and modem ports)
    - Direct session with OS using the MP command `SE`
    - Connection to another iLO using the MP command `CSP`
- Display of information about various internal subsystems
    - Field replaceable unit (FRU) information
    - System power state, temperature information, and fan status
    - Status of processors
- Logging, display, and keyword search of:
    - System console history
    - System events
- User access control
- DHCP and DNS support

- IPMI over LAN

- Licensing

- iLO Advanced Pack features, such as SSH access, group actions capability, and LDAP

NOTE   A complete description of the MP is provided in the *HP Integrity and HP 9000 Integrated Lights-Out Management Processor Operations Guide*.

Configuring the MP LAN Port IP Address

By connecting the MP LAN port to an active network, you have two options for configuring an IP address. The first option is to use a DHCP server, which automatically assigns an IP address, and the other is to use the ping command from another host on the same subnet to set a static IP address for the MP. After the IP address has been set, you can establish a telnet session to configure additional parameters.

If you are using a DHCP server, and it provides the Domain Name, and if the primary DNS server accepts dynamic DNS (DDNS) updates or has been configured through the DHCP server, then you can use a default host name to connect to the MP through telnet. The default host name is 14 characters long, consisting of the letters "mp" followed by the 12 characters of the Media Access Protocol (MAC). See "Configure an IP Address" on page 83 to determine the MAC address. If no DNS access is available, the telnet session can use the assigned IP address.

If you are using DHCP, proceed to "Accessing the Management Processor" on page 83. For more information on configuring DHCP, see "Configuring the Management Processor LAN Information" on page 85. For a non-DHCP implementation, perform the following steps to configure a static IP address.

Configuring a Static IP Address (Non-DHCP)

To configure a static IP address for the MP LAN port, follow these steps:

1. Set up local terminal access.

2. Configure the IP address.

Set Up Local Terminal Access After powering on the terminal, ensure the communications settings are as follows:

- 8/none (parity)

- 9600 baud

- None (receive)

- None (transmit)

If the terminal is a PC using Reflection 1, check or change these communications settings by performing the following steps:

Step   1. From the Reflection 1 Main screen, pull down the Connection menu and choose **Connection Setup**.

Step   2. Choose **Serial Port**.

Step   3. Choose **Com1**.

Step   4. Check the settings and change, if required.

Go to More Settings to set Xon/Xoff. Click **OK** to close the More Settings window.

Step 5. Click **OK** to close the Connection Setup window.

Step 6. Pull down the Setup menu and choose **Terminal** (under the Emulation tab).

Step 7. Choose a supported terminal type.

The preferred type is VT100.

Step 8. Click **Apply**.

This option is not highlighted if the terminal type you want is already selected.

Step 9. Click **OK**.

Configure an IP Address To configure the MP LAN static IP address, perform the following steps:

Step 1. Determine the Media Access Control (MAC) address of the MP LAN interface by viewing the label located at the rear of the server.

Step 2. Connect a LAN cable on your local subnet to the core I/O LAN port.

Step 3. Add an Address Resolution Protocol (ARP) table entry to another host located on your local subnet. This ARP table entry maps the MAC address of the core I/O LAN interface to the IP address chosen for that interface.

| **NOTE** | Adding an entry to the ARP table is typically done using the ARP command with the appropriate option. For example, `arp -s` is used with Windows. Consult your operating system documentation for more information. |

Step 4. Use the `ping` command from the host that has the new ARP table entry. The destination address is the IP address that is mapped to the MAC address of the MP. The MP LAN port should now be configured with the appropriate IP address.

Step 5. Use the `telnet` command to connect to the MP from a host on the local subnet.

Accessing the Management Processor

You can connect to the management processor using the following methods:

• The local serial port using a local terminal

• The remote Customer Service Modem (CSM) port using external modem (dial-up) access, if remote modem access is configured

• The MP LAN port using the Web interface, telnet, or SSH, if login access through the MP LAN is enabled

Local Terminal Access to the Management Processor

You establish communication with the MP by connecting a terminal to the local CSM I/O serial port.

You can establish a terminal session using a standalone terminal or using terminal emulation software, such as HyperTerm, Putty, or Reflection 1 running on a PC.

During installation, communicating with the MP enables such tasks as:

• Verifying that the components are present and installed correctly

• Configuring the LAN port

Interacting with the Management Processor

To interact with the MP command line interface, perform the following steps:

NOTE   On initial system installation, the MP has two default user accounts:

- All Rights (Administrator) level user; login = Admin, password = Admin (both are case sensitive).

- Console Rights (Operator) level user; login = Oper, password = Oper (both are case sensitive).

For security reasons, HP recommends that you use the UC command during the initial logon session to modify default passwords (enter **CM** at the MP> prompt, and enter **UC** at the MP:CM> prompt).

IMPORTANT Deleting default users such as Admin prevents you from using the HP Systems Insight Manager group actions feature.

Step 1. Log in using your MP user account name and password.

> **NOTE**   If you are logged in, the MP Main Menu displays. To follow this procedure, make sure you are at the MP Main Menu. Use **Ctrl-B** to return to the MP Main Menu.

Step 2. Use the MP menus and commands as needed. Main Menu commands are shown in "MP Main Menu". You can access commands not displayed in the MP Main Menu in command mode by first using the CM command at the MP prompt. You can display a list of available commands using the MP help function. Invoke the help function from either the MP Main Menu or the Command Menu prompts by entering **HE** followed by **LI**. You can return to the MP Main Menu by pressing **Ctrl-B**.

Step 3. Log out using the X command (enter **X** at the MP> prompt) after returning to the MP Main Menu.

MP Main Menu

Following are the MP Main Menu commands:

```
MP MAIN MENU:
      CO: Console
     VFP: Virtual Front Panel
      CM: Command Menu
      CL: Console Logs
      SL: Show Event Logs
     CSP: Connect to Service Processor
      SE: Create OS Session
      HE: Main Menu Help
       X: Exit Connection
```

NOTE   The previous example shows the Main Menu screen accessed through the local serial or remote modem ports. The list of commands displayed might be different and depends on your method of access to the MP.

Configuring the Management Processor LAN Information

LAN information includes the management processor network name, IP address information, and configuring DHCP and DNS service information.

To configure the management processor LAN IP address:

Step 1. At the MP Main Menu prompt (MP>), enter **CM** to choose command mode.

Step 2. At the command mode prompt (MP:CM>), enter **LC** (for LAN configuration).

The screen displays the default values and asks if you want to modify them. It is good practice to write down the information, because you might need it for future troubleshooting. See "The LC Command Screen" on page 86.

NOTE   The default value in the "IP address" field is set at the factory. You must configure the actual MP LAN IP address.

Step 3. The screen displays the current LC data. When prompted to enter a parameter name, A to modify All, or Q to Quit, enter **A** to choose all parameters.

Step 4. The screen displays the current DHCP status. If DHCP is used to acquire IP address information, enter **E** to enable, **D** to disable, or **Q** unless you are using the local serial port.

To disable DHCP from the local serial port:

a. Use the **LC** command to disable DHCP.

b. Commit the DHCP change.

c. Use the **LC** command again to set network parameters.

CAUTION   Modifying the DHCP, IP address, gateway IP address, or subnet mask parameters will drop all present LAN and Web connections.

NOTE   Changing DHCP status to Enabled or Disabled resets IP address, gateway IP address, and subnet mask parameters to factory default values.

NOTE   If the IP address, gateway IP address, and subnet mask are obtained through DHCP, you cannot change them without first disabling DHCP.

Step 5. The screen displays the current IP address. When prompted to enter a new value or Q, enter the new IP address.

Step 6. The screen displays the current host name. When prompted to enter a new value or Q, enter the new MP network name.

This is the host name for the MP LAN displayed at the command prompt. It is also used to identify the MP LAN interface in a DNS database. The name can be up to 64 characters in length, and must start with a letter, end with a letter or number, and contain only letters, numbers, or dashes.

NOTE	The host name is not case sensitive.

Step 7. The screen displays the current subnet mask name. When prompted to enter a new value or Q, enter the new subnet mask name.

Step 8. The screen displays the current gateway address. When prompted to enter a new value or Q, enter the new gateway address.

Step 9. The screen displays the current link state information. When prompted to enter a new value or Q, press **enter**. The message `-> Current Link State has been retained` displays.

Step 10. The screen displays the current Web console port number. When prompted to enter a new value or Q, press **enter**. The message `-> Current Web Console Port Number has been retained` displays.

Step 11. The screen displays the current SSH console port number. When prompted to enter a new value or Q, press **enter**. The message `-> Current SSH Console Port Number has been retained` displays.

NOTE	SSH settings will not display if you do not have Integrated Lights-Out Advanced Pack licensing.

Step 12. The screen displays a new LC listing, including the values entered in the preceding steps. Verify that the desired values have been accepted. When prompted to enter a parameter for revision, Y to confirm, or Q to Quit, enter **Y** to confirm all parameters.

```
> LAN Configuration has been updated

-> Reset MP (XD command option 'R') for configuration to take effect.

MP Host Name: mpserver
```

Step 13. Enter **XD -reset** to reset the MP.

Step 14. After the MP resets, log in to the MP again. Then enter the MP command mode (enter **CM** at the MP: prompt).

Step 15. At the MP:CM> prompt, enter **LS** to confirm the new LAN settings.

Step 16. Enter **SA** to enable or disable Web console and telnet access after the MP has been reset.

The LC Command Screen

The following screen shows LC command output:

```
MP:CM> LC -nc

Current LAN Configuration:

     MAC Address          : 0x0060b0f54c51

     DHCP Status          : Enabled

     IP Address           : 127.1.1.1

     MP Host Name         : maestro

     Subnet Mask          : 255.255.248.0

     Gateway Address      : 127.1.1.1

     Link State           : Auto Negotiate
```

```
      Web Console Port Number : 2023

      SSH Access Port Number  : 22

      IPMI/LAN Port Number    : 626
LAN status: UP and RUNNING
-> Command successful.
MP:CM>
```

NOTE   The SSH console port number does not display if you do not have Integrated Lights-Out
                 Advanced Pack licensing.

Management Processor (MP)

MP Command Reference

There are two menus from which commands are executed: the MP Main Menu and the Command Menu. You access the Command Menu by first using the CM command at the MP> prompt.

The following tables provide a reference for commands available through the command line interface.

MP Main Menu Commands

Commands are listed in Table 4-1.

Table 4-1   MP Main Menu Commands and Descriptions

Command	Description
CL	View console log
CM	Enter command mode
CO	Select console mode
CSP	Connect to another service processor
HE	Display help for menu or command
SE	Enter OS session
SL	Show event logs
VFP	Display virtual front panel
X	Exit

Command Menu Commands

Commands are listed in Table 4-2.

Table 4-2   Command Menu Commands and Descriptions

Command	Description
BP	Reset BMC passwords
CA	Configure async or serial ports
DATE	Display the current date
DC	Default configuration
DF	Display field replaceable unit (FRU) information
DI	Disconnect remote or LAN console
DNS	Set DNS configuration
FW	Upgrade MP firmware
HE	Display help for menu or command
ID	Display or modify system information

Table 4-2   **Command Menu Commands and Descriptions (Continued)**

Command	Description
IT	Modify MP inactivity timers
LC	LAN configuration
LDAP	LDAP configuration
LM	License management
LOC	Display and configure locator LED
LS	LAN status
MR	Modem reset
MS	Modem status
PC	Remote power control
PG	Paging parameter setup
PR	Power restore
PS	Power management module status
RB	Reset BMC
RS	Reset system through RST signal
SA	Set access options
SO	Configure security options
SS	Display system processor status
SYSREV	Display all firmware revisions
TC	Reset via transfer of control (TOC)
TE	Tell (send a message to other users)
UC	User configuration
VDP	Display virtual diagnostic panel LEDs
WHO	Display connected management processor users
XD	Diagnostics or reset of management processor

Booting the Server

To boot the server, press the power switch located to the left of the front panel LEDs.

NOTE	If the front bezel is attached and in the closed position, you will need to open the small door on the front bezel to gain access to the power switch.

If the autoboot function is enabled, the system will boot to the installed operating system. If autoboot is not enabled, the system will enter the boot console handler BCH. The BCH allows you to control the server's booting environment. For more information about the BCH, review the Utilities chapter of the *Operations Guide*.

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